



As chromium and nickel provide corrosion resistance in stainless steel, it follows that 18-8, 18-8 Cb, 18-8 ELC and 18-8 Ti, having similar chromium and nickel content, should have the same corrosion resistance. Exposure in certain types of service, however, may prove otherwise.

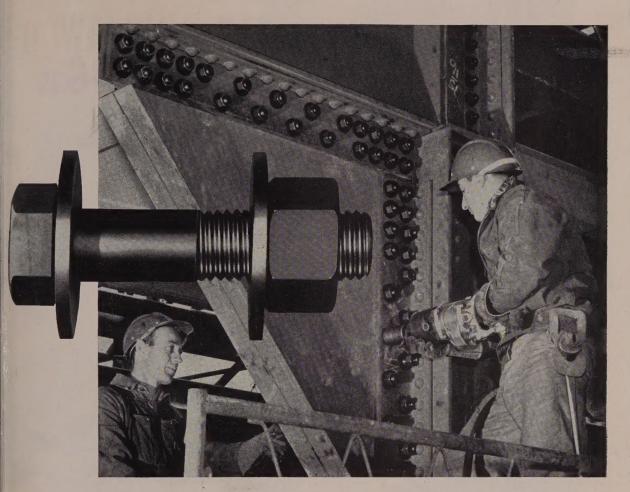
If tubing of these materials is field welded without subsequent heat treatment, or operated intermittently at high temperatures, there will be a difference in corrosion resistance. The 18-8 grade may lose its corrosion resistant properties while the other three grades maintain theirs. This is because of slight differences in chemistry—5 parts in 10,000 in carbon content or the addition of 5 to 7 parts in 1,000 of columbium or titanium. Thus, your particular end use service condition, in addition to the basic cost of materials, should dictate which grade to use.

For virtually any application—pressure or mechanical—B&W can provide either seamless or welded stainless tubing in any number of grades, in a broad size range. Help in obtaining the best stainless tubing for your applications is available through B&W Regional Sales Offices and a nationwide network of experienced tubing distributors. Mr. Tubes—your link to B&W—will be pleased to furnish detailed answers to your stainless tubing problems.

#### THE BABCOCK & WILCOX COMPANY TUBULAR PRODUCTS DIVISION

Beaver Falls, Pa.—Seamless Tubing; Welded Stainless Steel Tubing
Alliance, Ohio—Welded Carbon Steel Tubing





# JOBS GO UP FAST with HIGH-STRENGTH BOLTS

Steel erection moves along faster when you join structural members with Bethlehem High-Strength Bolts, instead of field-driven rivets.

Bethlehem High-Strength Bolts save erection time because they can be installed by two men using a holding wrench and a pneumatic impact wrench. The hexagonal-head bolts are used with two hardened washers, one placed under the head, the other under the hexagonal nut. Tightening can be accomplished in from 5 to 10 seconds per bolt, to obtain maximum clamping force.

Bethlehem High-Strength Bolts are made of carbon steel, in diameters from ½ in. to 1¼ in., and in varying lengths. They are heat-treated by quenching and tempering to meet the requirements of ASTM Spec. A-325.

For full information about how Bethlehem High-Strength Bolts can help speed your construction work, get in touch with the nearest Bethlehem sales office.

#### MECHANICAL PROPERTIES OF BETHLEHEM HIGH-STRENGTH BOLTS

Bolt Diameter	3/4 in.	7/8 in. and 1 in.	
Brinell Hardness	241 to 302	235 to 302	
Min. Tensile Strength, psi	120,000	115,000	
Min. Proof Load, psi	85,000	78,000	

#### BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation



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fuel is uniform in thermal value and gravity. Free from harmful contaminants, it burns *clean!* Automatic operation cuts down on overhead, assures constant furnace temperatures, atmospheres and pressures.

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\*Philgas is the Phillips Petroleum Company trademark for its high quality propane-butane LP-Gas or bottled gas.



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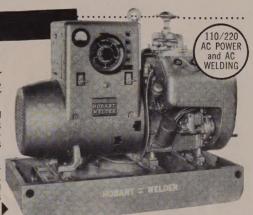
HOBART offers a model to meet your special requirements



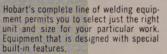
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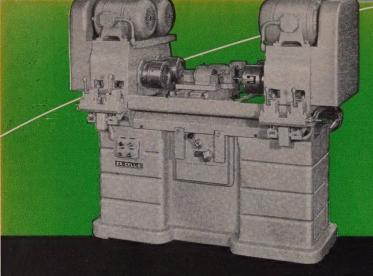
Right down to the stub—this Hobart No. 10 electrode gives more welding ease and efficiency. An all-position fast DC electrode, with a stable, deeply penetrating arc... deposits a smooth, flat bead of high tensile strength and dustility. Sond for EFEE camples ductility. Send for FREE samples.

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STYLE 1212-A. For identical or different operations at each end. When loading time of parts approximates the time of machining, a double-end machine practically doubles production capacity.

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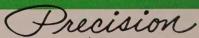
STYLE 17. Massive construction. Maintains the highest precision standards on a profitable production basis. Economical in operation, can be set up for variety of jobs.

With this versatile equipment, you can precision bore, turn, face, counterbore, chamfer, and groov

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MANUFACTURERS OF PRECISION MACHINE TOOLS • GRINDING SPIND CUTTING TOOLS • RAILROAD PINS AND BUSHINGS • DRILL JIG BUSHIN AIRCRAFT AND MISCELLANEOUS PRODUCTION PARTS • DAIRY EQUIPMIE

#### This Week in Metalworking



Vol. 134 No. 18

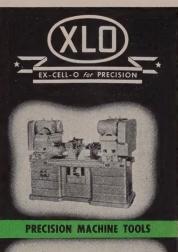
May 3, 1954

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Editorial, Business Staffs—16. Advertising Index—182. Editorial Index available semiannually. STEEL also is indexed by Engineering Index Inc., 29 West 39th St., New York 18.

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CONTINENTAL CUTTING TOOLS



PRECISION GRINDING SPINDLES



DRILL JIG BUSHINGS



AIRCRAFT AND PRECISION PARTS



HYDRAULIC POWER UNITS

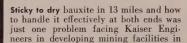
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A new, fast coupling for simplifying connections of tubing or piping, regardless of the size or purpose, is said to need no threading, flares, ferrules or tools to make the connection. A spring clip is pressed, the tubing is inserted, the spring is released and the connection has been made in one quick operation.





Jamaica. Self-heating truck bodies and other specially designed handling methods licked this problem. At the same time, the versatile talents of Kaiser Engineers were focused on all other facilities at the island mine: housing, drying, storage, a 995-foot dock, 13 miles of railroad and a 1,000 ton-per-hour conveyor loading system being just a few of them.

Chemical Business Handbook, just published, is the title of a valuable new book edited by John H. Perry. It is a reference book of modern business management keyed especially



to the needs of the chemical and chemical engineering industries.

When it comes to research, preliminary engineering studies, engineering design and layout, estimating, preparation of specifications, construction programming, negotiation of contracts, and procurement and expediting of materials and equipment—call or write: Kaiser Engineers Division of Henry J. Kaiser Company, Kaiser Building, Oakland 12, California.

## behind the scenes



#### Two-time Loser?

The long arm of the law reached into the Penton Building one day last week and tapped heavily upon the shoulder of John Morgan, STEEL assistant managing editor. Being a convicted jaywalker with a \$5.00 fine already on his record, Morgan felt himself a twentieth century Jean Valjean with his loaf of bread showing.

What did the FBI want? Well, someone had been pilfering the U. S. mail and, in the particular mail bag that had been stolen and later recovered, was one of STEEL's Quarterly Survey, questionnaire forms. This, of course, had John Morgan's signature on it. The detective was merely returning the letter in person in order to check on whether its contents were still intact.

Morgan heaved a sigh of relief and the unanswered questionnaire into the wastebasket. The officer would not permit himself to be quoted on the status of the metals market for the second half of 1954.

#### At Limbo

Every once in a while, our fingers, mind and typewriter have a particularly difficult time co-ordinating. Words become illusive—ideas non-existent. At times like these, we are reminded of a lament of a sorry soul in much the same predicament as we.

I want an odor-proof, motorproof car,

And a shock-proof, hock-proof watch.

And a fray-proof, fade-proof star, And some water-proof, lotta-proof Scotch.

I want a dun-proof, run-proof spouse,

And a debt-proof place to dwell—

Not this shatter-proof, rust-proof sound-proof, dust-proof, fool-proof padded cell!

#### Cover Pic

This week's cover photo is the kind that makes you want to swing back in your superupholstered chair, put your newly shined Florsheim's on the desk top and say, "Now when I was a youngster starting out in this business, we never had it so good. Fortunately, I had the talent, the ambition, the stick-to-it-iveness. . . ."

Pardon us for interrupting, but we want to take a minute here to thank Mr. Theodore Haas, director of training at Thompson Products Inc., Cleveland, for letting us use that particular photograph. Men like Mr. Haas are largely responsible for the youngster today getting that better break at job training.

One of his very pleasant assignments, he tells us, is to visit high schools in the northeastern Ohio area and discuss the benefits of apprenticeship training with students soon to graduate. Here is a man who can speak with authority for he is a product of the very school he now directs.

#### We're Starched

For approximately two years now, we on STEEL have employed the services of Daniel Starch and Staff, consultants in business research, to conduct personal interviews among our readers for the purpose of providing advertisers and their agencies more factual information with which to evaluate the readership of their advertising messages in STEEL.

Another valuable purpose of the Starch reader interviews is to furnish our editors a continuing measurement of reader interest in the magazine's editorial content. This helps to keep them constantly aware of your needs and permits them to provide the type of information you can put to most practical use in the performance of your jobs.

If a Starch researcher has already called upon you, we want to thank you for the time and information you gave him. If a Starch researcher calls upon you sometime in the future, please know that he is taking a few minutes of your valuable time to help us help you through the pages of STEEL magazine.

Shrollu



# 15 LEADING STEEL COMPANIES USE A. P. GREEN KX-99

#### CHECK THESE OUTSTANDING PROPERTIES OF KX-99

- Special high fired, Missouri super duty fire-clay brick.
- 2. No sign of carbon monoxide disintegration in 1000 hour test at 900° F.
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  4. Bulk density in the range of 2.30 to 2.40 grams per
- Bulk density in the range of 2.30 to 2.40 grams per cubic centimeter.
   Average modulus of rupture 1800 to 2500 pounds
- Average modulus of rupture 1800 to 2500 pounds per square inch.

KX-99 Blast Furnace Brick are manufactured to extremely close tolerances...uniform in dimensions...free from warpage.



KX-99 Blast Furnace Brick are recommended for Complete Blast Furnace linings, Hot Metal Mixers and Hot Metal Cars. They were developed to meet the service requirements in the Steel Industry. They resist carbon monoxide disintegration, slag action, chemical action and abrasion.

For detailed information on service and specific recommendations—contact your local A. P. Green Representative or write

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Toronto 15, Ontario













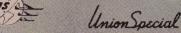
































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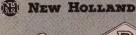


Ingersoll-Rand

LONG MEG. DIV., BORG-WARNER



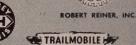


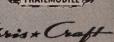
























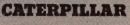




























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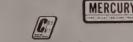








































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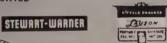








FAIRCHILD























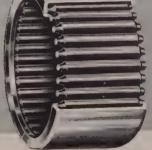








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#### LETTERS TO THE EDITORS

#### One Measure of Readership

We will appreciate tear sheets of the following articles: "The First 2 Minutes Count the Most" and "Lubrication: How Efficient Is Your System?" (Feb. 8); "Cut Labor Turnover Costs" (Feb. 15); "Layoffs: Nobody Likes Them, But—" and "Now You Have To Sell" (Feb.

If your magazine wasn't so darned good, we wouldn't need so many tear sheets.

L. H. Schaut purchasing agent Keystone Carbon Co. Inc. St. Marys, Pa.

• Sent.-ED.

#### What's Gone Before?

Congratulations on the first articles of your 1954 Program for Management series. They have definitely been must reading.

I feel that I have missed something in not having seen the 1953 Program for Management articles. Would it be possible to get tear sheets of them?

Thanks for the interesting and in-

formative reading.

Leland B. Howe purchasing department Polaroid Corp. Cambridge, Mass.

• Sent.-ED.

#### **Executives Must Be Molded**



I greatly enjoyed your article "Building Better Bosses" (Mar. 22, p. 81), No. 2 in the 1954 Program for Management. This article gives an excellent program to consider in planning executive management development.

Kenneth R. Gromlich training director International Textbook Co. Scranton, Pa.

#### Speedy Baler at Pontiac

We would like additional information on the scrap baler used at Pontiac Motor Division which was described in your article "Speedy Balers Feature Uniformity" (Mar. 15, p. 109).

I. Tama Ajax Engineering Corp. Trenton, N. J.

• Write to B. E. Brown, assistant plant engineer, Pontiac Motor Division, General Motors Corp., Pontiac, Mich.-ED.

#### **Guide Proves Lasting Value**

Our copy of "Guide for Selecting Tool Steels and Carbides," a special report in your June 16, 1952, issue, has proved of great value to us. We would appreci-

(Please turn to page 12)

NOW - from Borg-Warner's centrally located Ingersoll Steel Division, at New Castle, Indiana...

FORGING QUALITY

# INGOTS

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- Ample capacity to meet your needs
  ... on schedule.
- The assurance of uniform high quality from one heat to the next.



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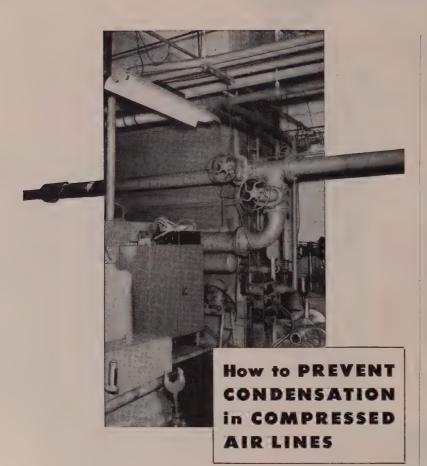


# Ingersoll STEEL DIVISION

**Borg-Warner Corporation**New Castle, Indiana

alloy steels • armor plate • carbon electric steel for tank clutch discs • clutch plate steels • heat-resisting steels • IngAclad stainless-clad steel • knife steels

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You can prevent these losses by installing a Niagara Aero After Cooler. It cools the compressed air or gas by evaporative cooling and removes the water before the air enters the receiver. This method brings the air to within a few degrees of the wet bulb temperature, making certain that your compressed air will always be colder than the atmosphere surrounding the lines in your plant, so that no further condensation can take place.

Savings in cooling water pay for the installation. Experience shows that the patented Niagara evaporative cooling method consumes less than 5% of the water required for cooling by conventional means. You save the cost of the water, the cost of pumping it, the cost of disposing of it. These extra savings soon pay for the Niagara Aero After Cooler.

Write for Bulletin No. 98

#### NIAGARA BLOWER COMPANY

Dept. 5 , 405 Lexington Ave.

New York 17, N.Y.

Niagara District Engineers in Principal Cities of U. S. and Canada



#### LETTERS

(Concluded from page 10)

ate another copy for use in our engineering department.

G. C. Wilhide Jr Black & Decker Mfg. Co Towson, Md

• Sent.-ED.

#### **Help Wanted Department**

One of our good customers has requested that we find a source for them for the following:

"A metering device for the measurement of low-velocity free-air flow such as convective currents around test equipment and air filtration through fabrics."

H. P. Wichelhaus
vice president
Apex Machine Tool Supply Inc.
Charlotte, N. C.

• Do Steel's readers know of a source of supply for this type of equipment?—ED.

#### **Don't Forget Neoprene**

We are very much interested in your article "Modern Coatings Add Service Life" (Mar. 15, p. 102). We would like to acquaint you with a particularly important type of industrial protective coating which was not mentioned in this article. That is neoprene in liquid and sheet form and, in particular, Gaco Neoprene, manufactured by our client, Gates Engineering Co., Wilmington, Del.

David A. Horn Renner Advertisers Philadelphia

• Space limitations made it possible to discuss all the various types of protective coatings that are available to industry today. We certainly agree that the new neoprene-type coatings are an important approach to the corrosion problem.—ED.

#### **Lacing Metal with Metal**

In the Apr. 12 issue, there is an article on Metalacing, "Fastening Costs Take a Nose Dive" (p. 100), manufactured by the Crockatt Engineering Co., San Francisco. Will you please send us the full address of that company as we would like full information on this product.

F. P. Tucker Estey Metal Products Inc. Red Bank, N. J.

• It's Crockatt Engineering Co., 1142-3 Phelan Bldg., San Francisco 2.—ED.

#### Substitute for Bauxite

Your Mar. 29 issue carries a very interesting Technical Outlook item, "Bauxite Substitute" (p. 101).

In this article it's stated that Fred M. Sievert Associates, Cleveland, are backers of the development. Thus far we have been unable to locate any further address for this company.

G. M. Butler Carborundum Co. Niagara Falls, N. Y.

• It's Fred M. Sievert Associates, 685 Union Commerce Bldg., Cleveland.— FD

# UNIFORMITY WEIRTON

also available in

HIGH CARBON STRIP

N-A-X HIGH-TENSILE STRIP

**ELECTROLYTIC ZINC COATED STRIP** 

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Next time your plans call for cold-rolled strip steel—call Weirton and be sure.

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#### what we hardened and how we did it

Crankshaf
 Camshaff

J. I don't

3 Rocker arm

4 Rocker arm shaft

5. Push rod

6. Starter ring gear

7. Overriding clutch cam

8 Timing gear

Here's a quick "road show" of Flamatic selective surface hardening applications to automotive parts, demonstrating the wide range of shapes and size. Flamatic can handle on a high production basis. Operation photos show how flexible tooling makes the basic Flamatic machine extremely productive.



These applications illustrate the three basic Flamatic principles—concentrate heat, control temperature, and confine hardness—which result in exceptional uniformity of results.

While the machines illustrated involve special modifications or tooling for long runs at high production, standard Flamatics permit economical handling of short runs when parts can be handled with relatively simple tooling or work-holding fixtures.

The Cincinnati Flamatic Heat Engineering Laboratory is at your service to analyze your needs, test-run your parts, and make recommendations. Write for Publication No. M-1724.



THE CINCINNATI MILLING MACHINE

Cincinnati 9, Ohio, U.S.A. • CINCINI



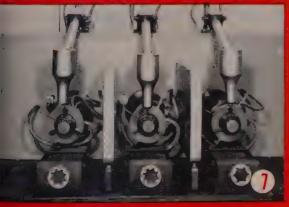
matic selectively hardens all throw and main bearings of crankshafts.



e-station Flamatic selectively hardens cups and pads on seven rocker arms



ben type flame heads permit continuous selective hardening of bush rods.



Over machines in one: Permits simultaneous selective hardening three size



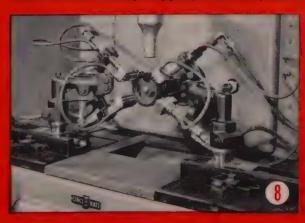
Selective hardening comshafts. Operation fully automatic except for loading.



labellya hardening elabt henring surfaces on tacker arm shaft.



Two-at-a-time Flamatic hardening of ring gears provides 300/hr, production



our flame heads harden two timing gears simultaneously.



It's Star Molyflex® **High Speed!** A Clemson exclusive.

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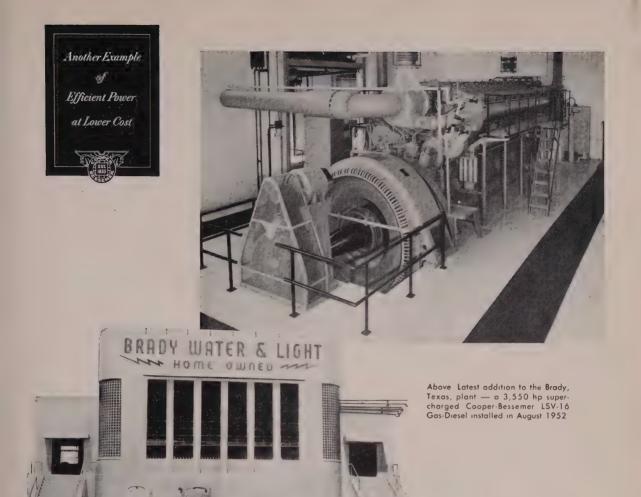
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#### BRADY'S GREATEST PUBLIC BENEFACTOR

#### .. a Cooper-Bessemer-powered municipal plant

TO say that the home-owned water and light plant at Brady, Texas, is a public benefactor is putting it mildly! Since 1942 this plant has advanced to this city of 7,000 more than \$600,000 for civic improvements, plus service donations exceeding \$200,000. It has helped keep taxes very low while defraying the costs of fire fighting equipment, police protection, street lighting, a new "whiteway" system, power for churches and schools at half cost, road improvements, 20 miles of new pavement and various recreation facilities including a swimming pool.

The Brady plant, like so many other efficient municipal plants, is powered with modern Cooper-Bessemer Gas-Diesels, assuring the highest thermal efficiencies known. Brady's latest is a big 3,550 hp supercharged unit installed in August last year. Because of its high efficiency it is kept in virtually 24-hour operation . . . 5205 hours through March 20, producing

7,325,000 kwh. The remainder of Brady's power is supplied by two older tandem-connected Cooper-Bessemers almost as efficient.

To make the most of your power plans for the future, be sure to check on the distinct advantages you stand to gain with modern Cooper-Bessemers.



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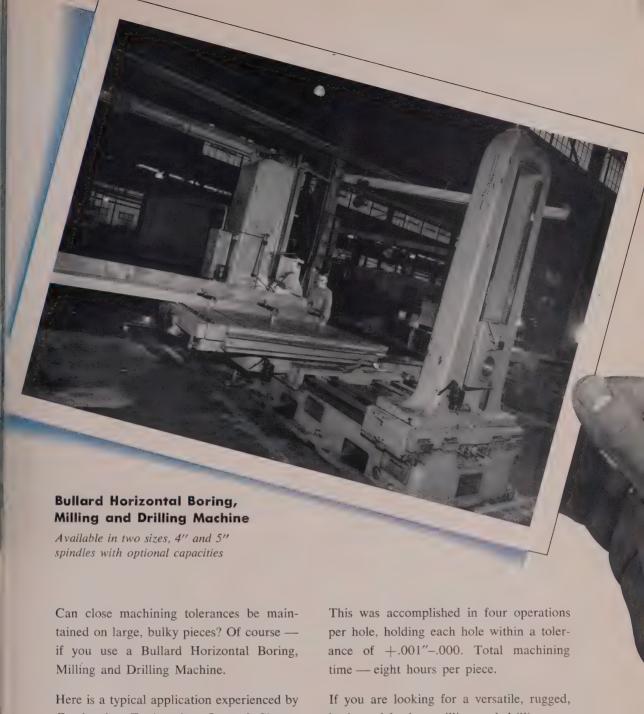
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The
Invisible
Background
of
Industrial
Progress

Modern farming methods, like modern industrial methods, use modern equipment to do the job better and faster. From the ox plow of our forefathers to the tractor with plow attachments, from the scythe to the modern reaper, from the hand hoe to the mechanized cultivator — these are just a few examples of the progress made in the farm equipment field which makes possible greater crops per acre with far less effort and time.

Modern Machine Tools are basic tools in the manufacture of mechanized farm equipment including tractors, sprayers, spreaders, cultivators and reapers — all truly, "The Invisible Background of Industrial Progress."



Combustion Engineering, Inc. of Chattanooga, Tennessee, manufacturers of highpressure boilers. The total length of the piece to be machined is 11 feet 4-13/32 inches and the job consists of boring fifteen 4-inch holes in a row and then milling the ends. horizontal boring, milling and drilling machine with "built-in" accuracy and efficiency, investigate Bullard. Your Bullard Representative will explain its many features or, write to The Bullard Company, Bridgeport 2, Connecticut — phone 6-2511.















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Youngstown is the one manufacturer who makes rigid steel conduit from ore to finished product. This enables Youngs-town to control the complete manufacturing process—your insurance that each length of "Buckeye" is made of top-grade steel.



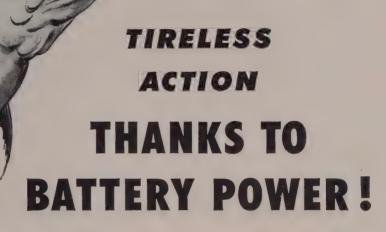
Smooth bends reduce wire pulling time, especially where workers are cramped for room. Buckeye always bends easily and smoothly. Interior surfaces are mirror-smooth, never chip or break under bending or shock. That's why so many contractors specify Youngstown rigid steel con-

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Tireless action—that's what your industrial trucks have got to have to keep up with today's materials handling needs. That's what you get when they're powered with new Gould "Thirty" Batteries with Diamond "Z" Grids. Extra reserve, extra performance, extra stamina are built into these batteries to keep your trucks in action all day long. There's no power like battery power—no battery power like Gould power.



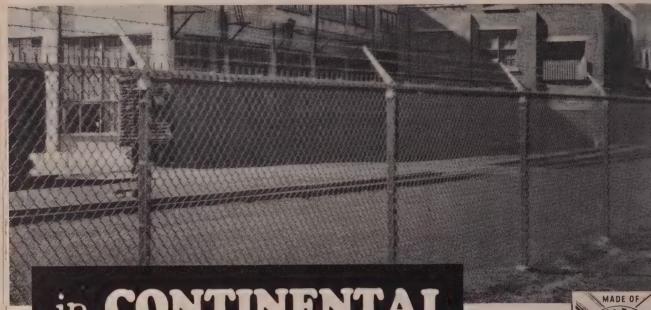
# GOULD INDUSTRIAL BATTERIES

GOULD-NATIONAL BATTERIES, INC., TRENTON 7, N. J.

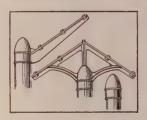
Always Use Gould-National Automobile and Truck Batteries

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# Features that Build Permanence.

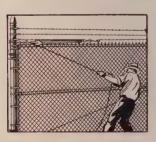


# in CONTINENTAL Fence Protection



#### HEAVIER POST CAPS-FITTINGS

Heavy malleable iron. bullet shaped post caps provide a moisture-proof seal Combination malleable iron and 12 gauge pressed steel self-locking barb arms are heaviest, strongest obtainable.



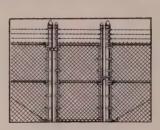
#### ENGINEERED AND ERECTED FOR LONGER LIFE

Continental Fence
Engineers help plan and
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Line poets are securely
set in solid concrete.
Tough brace bands, rods
and trusses hold
Continental Fence in
perfect alignment for
extra years of worry-free
property protection.



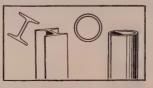
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All gates are equipped with positive-locking devices suitable for padlocking. They are stronger, neat appearing with improved pivot-type hinges. Counter-balanced gatekeepers automatically hold gates open. Securely braced slide, swing and and cantilever gates available.



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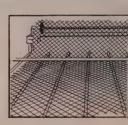
#### H-SECTION LINE POSTS 15% HEAVIER

H-Section line posts of special analysis copper steel provide more resistance to bending at right angles to fence line, where most damage occurs Extra heavy tubular corner posts furnish maximum resistance in every direction.



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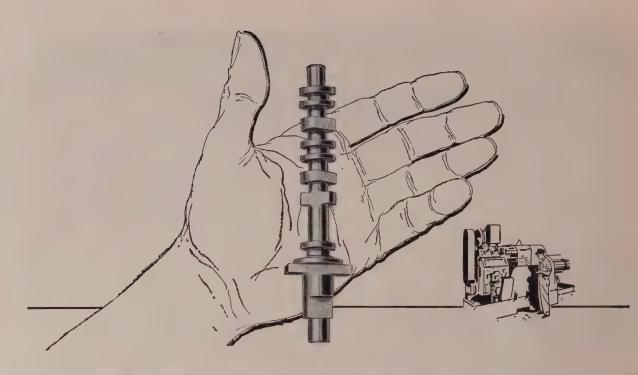


Control Bridge Control

#### GALVANIZED AFTE WEAVING

Full gauge, high tensile strend Continental Fence wire is wo exact mesh, then completely immersed in a temperature cerbath of molten zinc . . for a le more rust resistant armor coa Fabric withstands temperature changes . . retains tension are perfect alignment.





# MACHINABILITY CAN HELP YOU GET THE MOST OUT OF YOUR AUTOMATICS

• Are you getting the speeds and feeds you really could out of your automatics? Are you sure you couldn't produce more parts at lower unit cost?

The answer may be in the machinability of the steel you use. And that's why we at Union Drawn are so fussy about our steels.

Just to make sure that you get the most out of the Union Drawn Steels you buy from us, one of our metallurgists or machining engineers will be glad to work with your set-up man. They can swap hints on tool angles, heavier speeds and feeds, and the best ways to run Union Drawn Steels in *your plant* on *your machines*.

The result? More parts in the pan, fewer in the reject box. Production is maintained or increased. So are profits.

Remember: the most important factor that influences unit parts costs is the machinability of the steel you use. And at Union Drawn, machinability is our prime concern. When may we tell you about it?

#### REPUBLIC STEEL CORPORATION

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COLD DRAWN STEELS

# Profitable versatility for jobbing work!

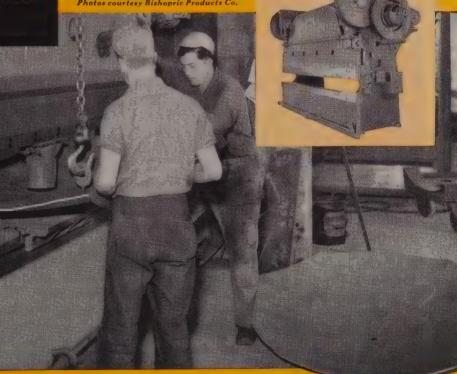
Cincinnati Press Brakes are profitable for bending, punching, press work and a great variety of jobbing applications.

Cincinnati Press Brakes, with low-cost tooling, simplify difficult sheet metal and plate jobs and are versatile, profitable and busy tools in any fabricating shop.

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#### CALENDAR

OF MEETINGS

May 2-4, American Steel Warehouse Associa-tion: Annual meeting, Hotel Drake, Chicago. Association address: 442 Terminal Tower, Cleveland 13. President: Walter S. Doxsey.

Cleveland 13. President: Walter S. Doxsey.

May 3, Wire Reinforcement Institute Inc.:

Annual spring meeting, Boca Raton hotel
and club, Boca Raton, Fla. Institute address: National Press Bidg., Washington 4.

Managing director: Frank B, Brown.

May 3-4, American Management Association:
Special conference on capital equipment replacement, Hotel Commodore, New York.
Association address: 330 W. 42nd St., New
York 36, Vive president-secretary: James O.

York 36. | Vice president-secretary: James O.

May 3-5, American Mining Congress: Coal convention, Hotel Netherland Plaza, Cincin-nati. Congress address: 1102 Ring Bldg., Washington 6. Executive vice president: Julian D. Conover.

Julian D. Conover.

May 3-5, Association of Iron & Steel Engineers: Spring meeting, Bellevue-Stratford hotel, Philadelphia. Association address: 1010 Empire Bidg., Pittsburgh 22. Managing director: T. J. Ess.

May 3-6, Air Pollution Control Association: Annual meeting, Patten hotel, Chattanoga, Tenn. Association address: 4400 Fifth Ave., Pittsburgh 21. Fragnitive, Search 19. Herry, Markey.

Pittsburgh 31. Executive secretary: Harry C. Ballman.

May 3-8, Concrete Reinforcing Steel Institute: Annual meeting, Boca Raton hotel and club, Boca Raton, Fla. Institute address: 38 S. Dearborn St., Chicago 3. Managing director: H. C. Delzell.

May 4, Steel Joist Institute: Annual meeting

May 4, Steel Joist Institute: Annual meeting for members, Boca Raton hotel and club, Boca Raton, Fla. Institute address: Dupont Circle Bidg., Washington 6. Managing director: C. H. Luedeman.

May 4-6, Electronic Components Symposium: Auditorium, U. S. Department of Interior, Washington. Information: Radio-Electronics-Television Manufacturers Association, 777 14th St. NW, Washington 5.

May 4-7. American Welding Society: National 14th St. NW, Washington 5.

May 4-7, American Welding Society: National

May 4-7, American Welding Society: National spring technical meeting and exposition, Hotel Statler and Memorial Auditorium, Buffalo, Society address: 33 W. 39th St., New York 18. Secretary: J. G. Magrath.
May 7, Investment Casting Institute: General meeting, Hotel Carter, Cleveland, Institute address: 27 E. Monroe St., Chicago 3. Executive secretary: Harry P. Dolan.
May 8-14, American Foundrymen's Society: Annual convention and blennial exposition.

Annual convention and blennial exposition,
Public Auditorium, Cleveland. Society address: 616 S. Michigan Ave., Chicago 5.
Secretary-treasurer: W. W. Maloney.
May 9-12, Liquefied Petroleum Gas Association
Inc.: Annual meeting and exhibit, Hotel Con-

rad Hilton, Chicago. Association address: 11 S. LaSalle St., Chicago 3. Secretary: Arthur C. Kreutzer.

May 10-11, American Management Association: Special marketing conference, Hotel Com-modore, New York. Association address: 330 W. 42nd St., New York 36. Vice presi-dent-secretary: James O. Rice. May 10-12, Purdue Industrial Waste Confer-

May 10-12, Purdue Industrial Waste Conference: Purdue University, sponsor. Purdue Memorial Union, Lafayette, Ind. Information: Don E. Bloodgood, chairman, C. E. Blidg., Purdue University, Lafayette, Ind. May 12-14, Porcelain Enamel Institute Inc.: Midyear divisional conference, Edgewater Beach hotel, Chicago. Institute address: 1346 Connecticut Ave. NW, Washington 6. Secretary: John C. Oliver.

May 16-19, American Institute of Chemical

May 16-19, American Institute of Chemical Engineers: Meeting, Hotel Kimball, Spring-field, Mass. Institute address: 12 E. 41st St., New York 17. Secretary: Stephen L. Tyler

May 16-19, Industrial Furnace Manufacturers Association Inc.: Spring meeting, The Home-stead, Hot Springs, Va. Association ad-dress: 412 Fifth St. NW, Washington. Sec-

retary: T. F. Sheckels.

May 17-19, National Industrial Distributors
Association: Annual meeting, Hotel WaldorfAstoria, New York. Association address:
1900 Arch St., Philadelphia 3, Secretary:
H. R. Rinehart.



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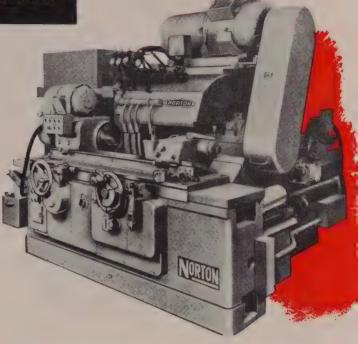
Delpark Filtration

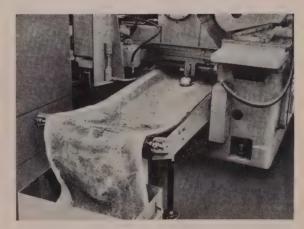
Recognition by Norton engineers of DELPARK as the finest in coolant filtration is acknowledged by the incorporating of DELPARK Filtration into the design of a new grinding machine introduced by Norton.

This machine is the Norton Type CM-1 Heavy Duty Semiautomatic Multi-Wheel Grinder. This unit utilizes several grinding wheels mounted between bearings for simultaneously grinding different diameters on the work piece in a single plunge-grind operation. Heavy sludge loads produced are immediately removed eliminating time loss necessary to clean reservoirs. Coolant supply is constantly kept clean and free of particles which would spoil the finish of ground work.

Thank you Norton, for your recognition of DELPARK Filtration as the finest.

> Write for the Delpark brochure on Norton's new type grinder



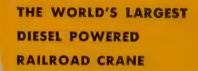


Norton Type CM-1 Heavy Duty Semiautomatic Multi-Wheel Grinder with built-in Delpark Filtration

# Depark industrial filtration

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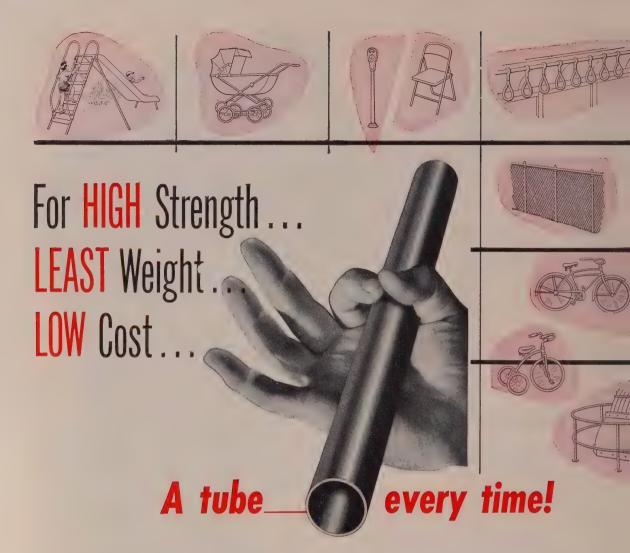
COAL-ORE BRIDGE



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For good commercial quality mechanical steel tubing at low cost, specify—or rather, insist on—NATIONAL. It is available in sizes up to and including 4" OD. Easy to bend, easy to form, it is made by the world's largest manufacturer of steel tubular products.

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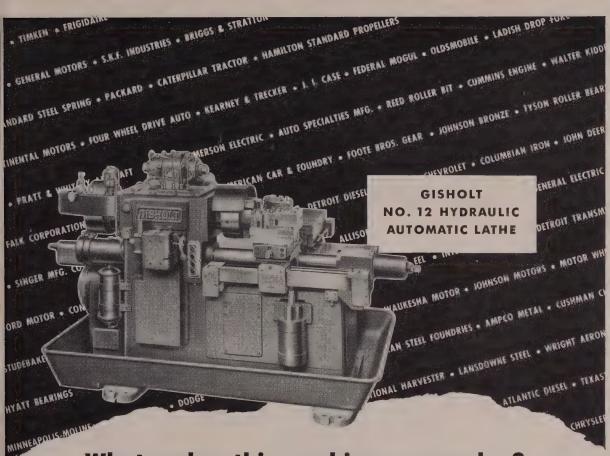
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STEEL TUBING

UNITED STATES STEEL



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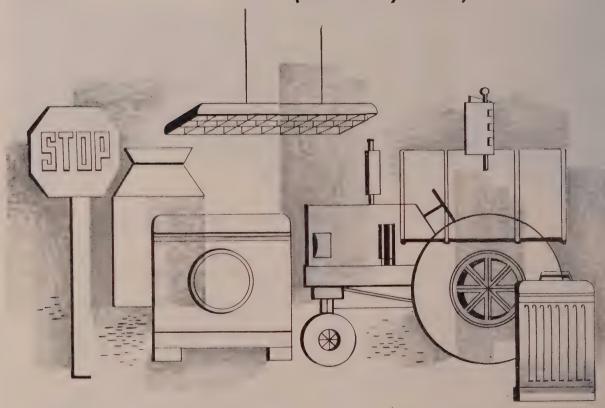
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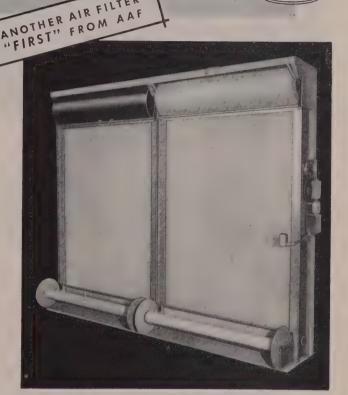
# -O-MATIC

A "Dry" Type Viscous Air Filter That
Maintains Its Efficiency Automatically
Up To One Year With One Roll
of Low-Cost AMER-glas Media

So automatic you don't even push a button! That's the new ROLL-O-MATIC—a high efficiency air filter that maintains its established operating resistance for months on end without an hour lost or a dollar spent for maintenance.

The ROLL-O-MATIC is a viscous filter with "dry" type characteristics—combines the efficiency and simplified maintenance of a dry filter with the high dust holding capacity and velocity characteristics of a viscous unit. The filtering media is a 2" thick AMER-glas mat made up of continuous glass fibres sprayed with non-flammable Viscosine fluid-jell.

The AMER-glas media, in roll form, is mounted at top of the ROLL-O-MATIC and moves as continuous curtain down the face of the filter and re-rolled on motor-driven spool at the bottom. A pressure differential switch regulates the movement of the filter curtain so that media usage is in direct proportion to the dust content of the air. Field tests indicate that, under normal operating conditions, a single roll of AMER-glas should last one year per 10,000 cfm of capacity. But



A ROLL-O-MATIC filter of two 5'0" wide by 8'0" high sections—capacity 26,700 cfm.

regardless of amount of media used, the cost will be less than that of throw-away filters.

Other ROLL-O-MATIC advantages are (1) lighter weight, (2) low-cost installation and (3) elimination of all drain and water connections. For complete design and engineering data, call your local AAF representative or write direct for Bulletin No. 248.



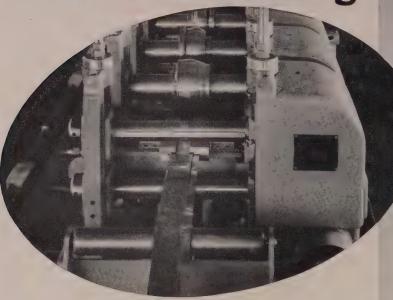
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If you make anything that can be cold-roll-formed in fair quantities, you may be sure it will mean either higher production or greatly reduced cost, or both. Moreover, because roll-formed shapes can be designed for highest strengthweight ratio, this method often affords material savings exceeding the entire conversion cost.

There may be some operation in your plant where coldroll-forming would prove more economical than present methods; or you may be buying components made by other methods, which you could make yourself at greatly reduced cost. Sometimes other operations, such as curving, coiling, embossing, perforating, welding, etc., can be combined with roll-forming at little or no extra cost. In any case, feel free to consult Yoder engineers as to practicability and cost of applying a cold-roll-forming machine to any operations you have in mind.

The Yoder Book on Cold-Roll-Forming may prove of interest to you. It's yours for the asking.

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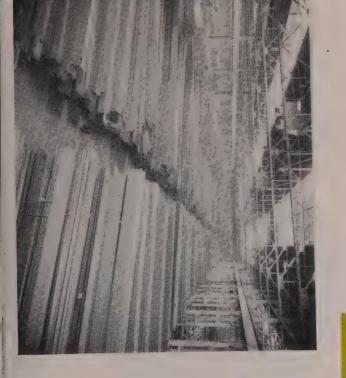
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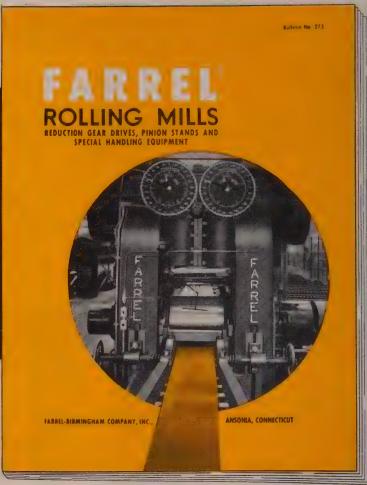
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to your exact specifications

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This new 36-page bulletin contains a wealth of information about Farrel rolling mills, gear drives, pinion stands and special handling equipment. For example:

ROLLING MILLS—The first twenty-three pages contain illustrations and brief descriptions of more than thirty sizes and types of mills for rolling nonferrous rods, strips or sheets, metal foils and cold strip steel. These range in size from a 30" x 36" cold brass breakdown mill to a

6" x 6" self-contained unit suitable for laboratory work or specialized production.

REDUCTION GEAR DRIVES AND PINION STANDS—Under this heading you will find four pages of data on single and double reduction gear drives, pinion stands and combination units.

SPECIAL HANDLING EQUIPMENT—Pages 28 to 31 show examples of handling and manipulating equipment specially designed and built to meet individual requirements.

Send for your copy of this new bulletin. Just fill out the coupon and mail it today.

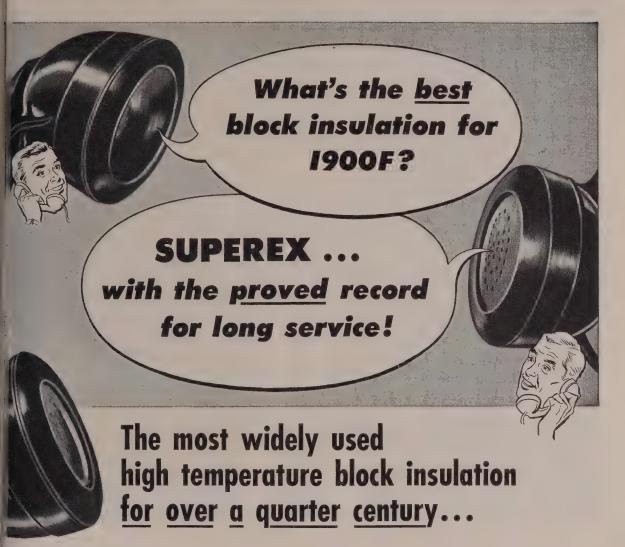
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SUPEREX® high temperare block insulation has long been inustry's No. 1 choice for service temeratures up to 1900F. It provides major conomies . . . reduces fuel costs, cuts eat losses, keeps maintenance expense own, costs less to install and has long ervice life.

These are the reasons why 90% of ie nation's hot blast stoves are Superex isulated ... and why the low cost open earth steel producers use Superex in leir regenerators.

Made of specially selected and calined diatomaceous silica blended with ther insulating materials and bonded ith asbestos fiber, Superex will safely rithstand temperatures up to 1900F with egligible shrinkage.

Superex has been used with outstand-1g success in all types of industrial and netallurgical furnaces and ovens, staonary and marine boilers, auxiliary ower plant equipment, regenerators,

kilns, roasters, high temperature mains, flues and stacks.

## Superex has all these important advantages...

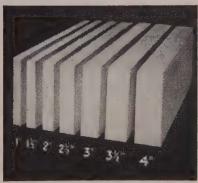
Low thermal conductivity—Exceptionally high heat resistance (1900F) combined with excellent insulating value.

Light weight - Approximately 2 lb per sq ft per in thickness.

Great physical strength-Approximately 6 tons pressure per sq ft are required to compress Superex 1/8 in.

Long, efficient service life-Superex maintains high insulating value indefinitelywill not disintegrate in the service for which it is recommended.

Fast, easy application—Superex may be cut with an ordinary knife or saw for fitting around openings or to irregular surfaces. Because of its light weight and convenient sizes. Superex assures fast and economical For complete information about Superex block insulation, write for Brochure IN-134A. Address Johns-Manville, Box 60, New York 16, N. Y. In Canada, write 199 Bay Street, Toronto 1, Ontario.

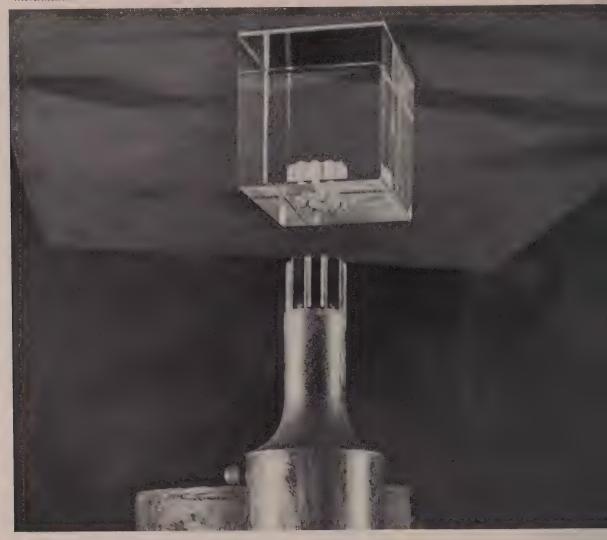


Waste is minimized with Superex because of the variety of thicknesses available. Special shapes and intermediate thicknesses between those shown are also available.





NSULATIONS



Using high-frequency vibrations and low-cost abrasives, the Ultrasonic Machine Tool carves holes and patterns of all shapes in hard-to-work materials. Development of the tool climaxed more than 10 years of research and experimental work.

# How SILENT SOUNDS CUT HOLES you can't dril

This common steel gear bites its way into a glass cube as smoothly as it would mesh with its mate.

And that's something, for chiseling through glass is quite a trick, even with a tool designed for the job.

Yet, as you can see, it's being done right here. And the machine that does it can also sharpen the hard metal tools used to cut other metals. It can cut diamonds without the use of diamond powder. Some day, it may even eliminate the heatgenerated pain caused by your dentist's whirling drill, or provide a vastly improved method for breaking up kidney- and gallstones.

Now how does this revolutionary tool work? By ultrasonic vibration.

It vibrates 27,000 times a second! Every vibration pounds waterborne abrasive against the surface you're cutting, and steadily chisels away tiny particles.

It took time to produce and control these vibrations. Over 10 years of research and trial-and-error experimentation! Then—with the help of Inco Nickel — the successful method was perfected.

Pure nickel, when placed in an electromagnetic field, contracts much more than other commercial metals, and returns to its original length. (Physicists call this "magnetostriction.") It is this motion—stepped up a hundredfold—that produces the vibrations which give

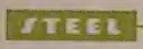
the tool its bite.

There are many similar useful qualities found in Inco Nicke Alloys. Between them, pure nicke and Monel provided the key to the problems of the ultrasonic machine tool. Another of our metals makelp to open a door now locke to you. Let's get together and wor out that problem of yours—soo

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# Metalworking Outlook

May 3, 1954

# Sparks Fly on GAW

The two electrical unions—IUE-CIO and UE-Ind.—are seizing upon the excellent earnings reports of General Electric Co. and Westinghouse Electric Corp. as ammunition in their current wage negotiations with the two companies. Westinghouse's first quarter net income, for example, was \$26.3 million, up 55.9 per cent over the first quarter of 1953. Both companies are adamantly against and both unions appear as strongly committed for the guaranteed annual wage. If both sides still are as far apart on that issue at the end of May, look for a strike. But walkouts are unlikely on a company-wide scale at either firm. Rather, key operations would be hit; the big new Louisville appliance facilities may be the trouble spot for GE.

# Some Earnings Rise

Surprisingly good earnings reports for the first quarter are turning up, amid a generally somber metalworking profits picture for the period. General Motors Corp.'s net income hit \$189 million, compared to \$151 million in the first quarter of 1953. Continental Can Co.'s net earnings for the first three months this year rose to \$3.0 million from \$2.5 million in last year's same months. Inland Steel Co. is a standout among major steel companies (p. 58) because its earnings this first quarter are better than a year ago.

### The Official View

Top steel company executives are beginning to talk about the guaranteed annual wage. Inland President Joseph L. Block says that to add a new financial burden in the form of a guaranteed annual wage on top of the obligations for pensions and insurance might be the straw that breaks the camel's back. Weirton Steel Co. Vice President George T. Fonda points to the experience of the coal miners' welfare fund to show that company contributions will be forced to grow and grow. Pittsburgh Steel Co. President Avery Adams thinks the plan impractical. Steelworkers met this week to draw up GAW and other demands. Negotiations on the contract, which expires June 30, start this month. On Apr. 27 the union formally asked for parleys.

# More Liberal: Progress Payments

Defense producers will be able to get progress payments on contracts for long lead-time equipment without furnishing elaborate justifications. The payments generally will not exceed 75 per cent of total contract costs or 90 per cent of direct labor and materials costs of work done under the undelivered portion of a defense contract. The new policy applies only to manufactured goods.

# A Lot of Money for Defense

The effect of budget cuts for the military will not be suddenly apparent because the services have an estimated \$48 billion left from previous appro-

# Metalworking

# Outlook

priations. The House Appropriations Committee approved \$28.7 billion for the armed services in fiscal 1955, \$1.2 billion less than the President's request and \$5.6 billion less than was granted in the current fiscal year. Of the \$28.7 billion, \$7.6 billion goes to the Army, \$9.7 billion to the Navy and \$10.8 billion for the Air Force.

# **Leasing Pays Off**

Kearney & Trecker Corp. says its new machine tool leasing plan is helping to boost direct sales, too (p. 61). The practice is spreading to the textile machinery field, also. Universal Winding Co., Providence, R. I., says its leasing program is catching on, and exhibitors at the American Textile Association meeting last week in Atlantic City say renting provides a long-sought way to modernize.

# Real Estate Roundup

Are you in the market to buy or build a new plant? Society of Industrial Realtors reports a strong demand for vacant industrial land, with prices rising. The market is strong for one-story factories and warehouses, but prices are stable. If you can use a multistory plant or warehouse, you can probably get a good buy because prices are weakening.

# **Aluminum Firms Look Around**

Interest is mounting in aluminum production sites in Alaska and the Canadian Northwest. Kaiser Aluminum & Chemical Corp. is preparing plans for a "preliminary survey of a possible hydroelectrical development" in British Columbia as potential source of power for its primary production and fabricating operations already in the American Northwest. Observers point out that such a power project could also serve new facilities in Canada and Alaska. Aluminium Ltd. is already solidly established there, with its Kitimat, B. C., project scheduled for operation in midsummer. The Canadian firm just established a new international sales development unit to help increase the metal's consumption.

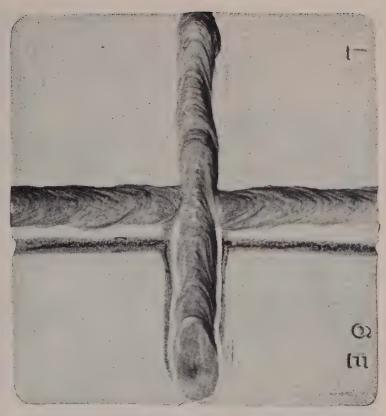
## Straws in the Wind

New National Steel Corp. president is Thomas E. Millsop, replacing George R. Fink who remains a National director; Mr. Millsop continues as president of the National subsidiary, Weirton Steel Co., and Mr. Fink moves from president to chairman of another subsidiary, Great Lakes Steel Corp. . . . Office of Defense Mobilization has a plan in the works to free 10 per cent of titanium production for civilian use . . . Elgin National Watch Co. is entering the tungsten carbide field with a line of cutting and grinding tools . . . Kennametal Inc. has cut basic carbide prices 10 per cent . . . The Senate Finance Committee will start voting today (May 3) on the House-passed tax reform bill.

# This Week in Metalworking

Look for an upturn in buying of steel, copper and aluminum this quarter (p. 55) . . . Automation held the spotlight at the Tool Show (p. 57) . . . Manufacturing's 1953 earnings ratio to sales continued the downtrend started in 1946, but the decline was less (p. 58) . . . Powdered metal applications soar (p. 60).

# HOW ARMCO "ELC" STAINLESS CUTS COSTS IN WELDED EQUIPMENT



Are you buying the premium-priced stainless steel grades, Types 321 and 347? If it's simply a welding problem and the equipment operates at less than 800 F, here's how you can reduce costs.

Armco produces two extra-low-carbon (ELC) stainless steels that are completely satisfactory for service in welded equipment up to 800 F. They are:

Armco 18-8 ELC (Type 304L) Armco 18-12 Mo ELC (Type 316L)

Armco 18-8 ELC costs less than the columbium-stabilized Type 347 or the titanium-stabilized Type 321, yet insures the same freedom from intergranular corrosion in service below 300 F as the more expensive types. The Armco ELC types are produced in sheets, strip, plates, bars and wire.

#### "EXTRA-LOW-CARBON" DOES IT

Armco ELC grades contain a maximum of only 0.03 per cent carbon. This small amount of carbon is not enough to cause harmful carbide precipitation adjacent to welds during welding. Stabilizing elements are not needed, either for shop or field welding.

#### GET COMPLETE INFORMATION

Let us send you a copy of the booklet, "Armco's ELC Stainless Steels." Or, if you want technical information for your engineers we'll send you a copy of the article, "How to Control Carbide Precipitation in Welding Stainless Steels." Just fill in the coupon and mail to us.

The effect of 6-hour immersion in a hot solution of 10 % nitric acid and 3 % hydrofluoric acid. On the upper portion of the sample (Armco 18-8 ELC), there is no evidence of chemical attack adjacent to the weld. The lower portion (Armco 18-8), shows severe attack and perforation. Electrode was Type 308L.

# OTHER SPECIAL ARMCO STEELS

Besides stainless steels, Armco is a major producer of Cold-Rolled Sheets and Strip, Enameling Iron, Electrical Steels, and sole producer of ALUMINIZED Steel, ZINCGRIP and ZINCGRIP PAINTGRIP Steel sheets and coils.

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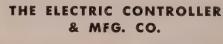
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A CLEAN SWEEP WITH ECEM MAGNETS

Send for 24-page Bulletin 900 showing magnets at work



Cleveland 4, Ohio





# Wage Rates Are Relative

From the early thirties until about the middle of last year almost every change in wage rates or in salaries in most industries in the United States was upward. During this period, social, economic and political conditions were such that it was only natural that compensation for work invariably should go up instead of down.

Early in 1953 a new administration took office in Washington. One of its main objectives was to institute reforms that would balance the budget, end inflation and ultimately restore the purchasing power of the dollar. The leaders of the administration discovered within a few months that their hard money policy could not be adopted abruptly without jolting the economy too severely. The desirable fiscal reform must be executed gradually and cautiously.

However, the brave effort did have the effect of calling a quick halt to inflation. Also, the end of hostilities in Korea and other factors brought about a decline in industrial production and consequently a drop in employment. Thus, for the first extended period in 20 years there are conditions under which one might expect occasional reductions in wages or salaries instead of increases.

Therefore it is not surprising that a few cuts have occurred. Members of United Auto Workers-CIO, Local 12, in Toledo, recently agreed to give up an incentive plan that probably will reduce their pay 5 per cent in order to help their employer, Kaiser-Willys Motors Inc., over a somewhat difficult period. In Kentucky and Virginia several coal mines which had contracts with United Mine Workers shut down and then weeks later reopened on a nonunion basis. This meant that the miners were working at wages at least 30 per cent below the union scale. There are other sporadic instances where pay for work has been reduced.

Of course no one likes to have his income reduced, but it will do no harm for employers and employees to be reminded again that wages are relative to other factors and that under certain circumstances a wage cut can be a corrective that in the longer term can prove to be a blessing in disguise.

> -E. C. Pha EDITOR-IN-CHIEF

**SAVE MONEY ON LIGHT!** metalworking establishment depends upon artificial lighting to such an extent that the cost

of lighting maintenance runs into substantial figures. A lighting expert points out (p. 114) that by paying close attention to eight precautionary measures, it may be possible to save real money on lighting.

One of these eight is a systematic plan for lamp replacement. Assume you are using 40-watt fluorescent lamps, your maintenance men are being paid \$2.70 an hour and it takes 20 minutes to change a lamp. If you are pursuing the natural policy of renewing a lamp only after it has burned out, this policy is costing you \$178 per 100 lamps replaced. On the other hand, if you adopt a policy of replacing all of the lamps when they have completed 80 per cent of their rated life, or as an alternative plan, when they have completed 70 per cent of rated life, then the cost will be \$143.75 or \$138.57, respectively, per 100 lamps.

These savings, namely \$34.25 or \$39.43 per 100 lamps, in many plants would run into impressive figures. Economy-minded managers might look into this opportunity to save money.

PIONEER IN RESEARCH: The foregoing tip on how one may save money on plant lighting came from Don Phillips, illuminating engineer, Lamp Division, General Electric Co., Nela Park, Cleveland. As many readers probably know, Nela Park was one of the pioneer research laboratories in the country. The half dozen or more buildings were erected more than 40 years ago in an attractive campus or park-like acreage about nine miles east of downtown Cleveland.

At that time, there were no zoning laws, and there were few residences near Nela Park. During the intervening years the surrounding area has been built up to capacity with homes, churches, schools and retail establishments. During all these years, no resident has ever complained about Nela Park as being an undesirable neighbor in the community. On the contrary, it is considered an asset and a showplace which native Clevelanders are proud to exhibit to visitors.

ENEMIES OF PROGRESS: In view of the excellent reputation which Nela Park has won during four decades, it is difficult to understand why so many people today oppose research laboratories in nonindustrial areas. During the past year scores of leading industrial corporations have sought permission from city councils to build research laboratories in areas

which have been zoned for residential or institutional use.

In many cases the councilmen favor the project because they study its implications sufficiently to realize that it will be advantageous tax-wise, will bring a high type of professionals into the community and will present to public view buildings and grounds that will be more attractive than most of the premises in the community. But this attitude will not be displayed by all of the citizens. There is bound to be an eager beaver who, completely ignorant of what a laboratory is, will inflame the people with the idea that a dirty, smelly factory is to be dumped into the home section of their fair city.

IN FAVORED POSITION: The growth of research is so important, the advantages of having a research center in many enterprising communities are so attractive and the misconception of a research laboratory is so widespread that they all point to the need of a real selling job on the part of American industry. If the case of the industrial research laboratory center in a university campus environment were presented properly to the American people, there would be an almost complete reversal of public attitude.

Instead of the almost automatic opposition stemming largely from ignorance and an inborn antipathy toward anything industrial, there would be a realization that research is a powerful constructive force in the nation's destiny and that the communities which foster the advancement of research are in a favored position.

TOO FEW APPRENTICES: A perennial problem of American industry is the training of apprentices. It is an important yet complicated undertaking. If you go into it haphazardly, you may wind up with the realization that you have spent a lot of money and that many apprentices you have trained have been enticed into the ranks of your competitors.

Nevertheless, something must be done to develop more skilled workers. Government figures (pp. 65, 66, 67), which are not too accurate, indicate that the number of apprentices today does not exceed 250,000. By conservative estimate, the figure should be 820,000. This means our shortage in apprentices is 570,000. This is tremendously important.

# 520 61175

# IN AN 8-HOUR DAY...

Angles, Bars, Channels and Beams

Report from

Joseph T. Ryerson & Son, Inc., Chicago; branch warehouses in principal cities.

Number of Kling Friction Saws in use 16 - among all

Ryerson plants.

Jobs performed Cutting angles, bars, channels, beams.

Average Cuts Per Day Average 520 cuts of miscellaneous items in an 8-hour day, ranging from light channel sections to 30" x 124 lb. beams.

Other Advantages Has reduced the amount of burr, reducing time required to chip or clean the cut.



# HIGH SPEED FRICTION SAWS

increase cutting production FOR "THE BEST OF COMPANIES!"\*

Greater cutting speed with all types of steel . . . versatile ability to cut many different kinds of structural shapes... cleaner cutting ... and lower investment in initial equipment-these are some of the advantages that attract industrial plants and steel warehouses like Joseph T. Ryerson & Son, Inc.—to the use of Kling Friction Saws.

One Kling High Speed Friction Saw can handle a volume of cutting that would otherwise require several shears or other type saws. Consequently, Kling Friction Saws make possible faster cutting of structural shapes without changing set-up, than any other known process.

The reason for the exceptional speed of Kling Friction

Saws is, that they operate on a principle practically the opposite of the ordinary tool or conventional saw. Friction sawing concentrates the heat on the material to be severed, at a rate which is faster than it can absorb heat. The process is not new, but has been applied successfully for years.

Following are Some of the Users of Kling Friction Saws Allis-Chalmers Mfg. Company A. M. Castle & Company Bethlehem Steel Inc.

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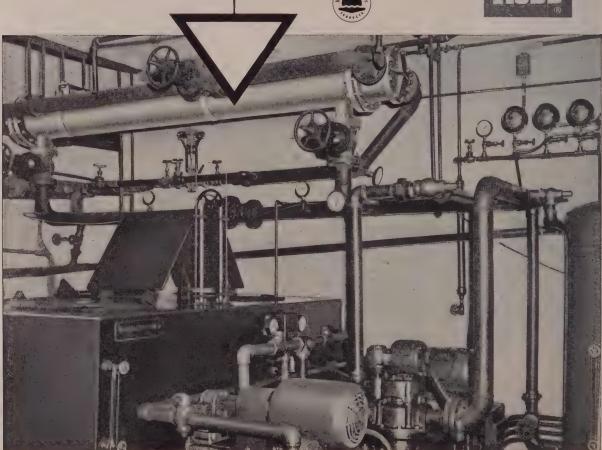
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# Rise in Metals Buying Forecast

One out of three purchasing agents surveyed expects rise in steel, copper and aluminum inventories for second quarter, 1954. Midwest is stronghold of optimism

CONFIDENCE in a business pickup later in 1954 is bolstered by results of STEEL's latest survey of metalworking's purchasing plans for steel, copper and aluminum. One-third of responding purchasing agents expect to increase inventories of those products during the second quarter, 1954.

The optimistic trend toward higher inventories anticipated by 34 per cent of the responding buyers is 9 per cent stronger than that revealed at the beginning of the first quarter, 1954. Only 66 per cent of respondents still expect that stocks will remain equal or be reduced further, compared with 75 per cent in the previous survey.

Results of this quarterly survey buttress the findings of an earlier STEEL study (Apr. 19, p. 93) which revealed steel buying on a weighted average of respondents would increase 3.7 per cent in May, 1954, over March, 1954. Then, as now, 34 per cent of the respondents expected to share in the increase.

Geographically Speaking — Anticipation of a rise in metals inventories centers in the Midwest. Almost half of the purchasing agents in that area expect to have larger stocks and this group, in turn, comprises more than half of the total number of purchasing agents expecting bigger inventories.

Rosy optimism does not pervade

the entire country, however. There still are scattered inventory adjustments downward to be made. Says one firm: "Anticipated pickup in business has not materialized." Southern buyers comprise more than one-third of the group anticipating further reduction in stock.

Below Par—Responding purchasing agents indicated that inventories for 10 of the 17 metal products in the table on page 56 are considered below the ideal; six of these 10 products are cited as being in serious inventory imbalance. They are cold-finished bars over one inch, hot-rolled alloy bars, hot-rolled carbon bars under one inch, hot-rolled sheets and strip, structural shapes and seamless tubing.

While present stocks of most metal supplies are lower than they were three months ago, the countertrend toward higher inventories is already becoming apparent in eight of the products listed: Cold-finished bars over one inch, hot-rolled carbon bars under one inch, galvanized sheets, heavy plates, structural shapes, seamless tubing, stainless sheets and strip and aluminum products.

Customer Calls It—Should the tendency toward higher inventories gain momentum it can be easily translated into actual stocks. All deliveries are faster now than three months ago. As one purchasing agent put it, "We can get most any delivery requested."

And a large segment of metalworking buyers believe the requests will be for heavier shipments in second quarter, 1954.

# Pittsburgh Steel Transformation Brings Balance

PITTSBURGH Steel Co. turned the page to a new chapter in its corporate history last week when it completed four years of extensive and expensive (\$65 million) transformation. The 48-per-cent increase in ingot capacity and the 82-per-cent boost in finishing capacity take Pittsburgh out of the "marginal operations" classification, broaden the company's range and free it from the highly cyclical semifinished market.

Box Score—Before 1950, total

annual shipments of steel products averaged 695,000 tons. About one-third of this was seamless tubes, one-third wire and the remainder semifinished steel. Big cause for concern was shortage of finishing capacity which meant that one-third of the capacity had to be marketed as ingots.

When Avery C. Adams joined Pittsburgh Steel as its president in 1950 the rebuilding plan began to take shape. Thomas Steel Co., Warren, O., was acquired in 1951

# Latest Metal Supply Picture as Seen by STEEL's Quarterly Survey

(Figures are percentages of those replying to the questionnaire)

PRODUCTS	INVENTORY POSITION					BEST DELIVERY				
	Under 10 days	10-30 days	30-60 days	60-90 days	3-6 mos.	Under 10 days	10-30 days	30-60 days	60-90 days	3-6 mos.
C. F. Bars, over 1" (This quarter) (Last quarter)	15 10	30 21	25 31	16 31	. 14 7	<b>42</b> 20	<b>32</b> 56	21 16	5 8	
C. F. bars, under 1"	<b>6</b> 8	<b>39</b> 20	<b>31</b> 36	15 24	9 12	<b>36</b> 14	<b>41</b> 59	18 23	<b>5</b>	· <b>4</b>
H. R. alloy bars	11 10	17 19	<b>39</b> 57	17 14	16	33 18	<b>34</b> 53	27 29	. 6	
H. R. carbon bars, over 1"	<b>8</b> 5	25 23	42 46	17 16	8 10	27 18	37 24	<b>30</b> 49	3 6	<b>3</b> 3
H. R. carbon bars, under 1"	<b>5</b> 3	24 15	<b>39</b> 45	17 25	15 12	29 22	42 27	24 41	<b>3</b> 5	<b>2</b> 5
H. R. sheets, strip	<b>5</b> 5	14 18	<b>42</b> 50	25 16	14 11	23 6	26 29	<b>48</b> 52	3 10	3
C. R. sheets, strip	<b>9</b> 9	25 15	<b>33</b> 40	25 18	<b>8</b> 18	18 10	36 22	<b>46</b> 55	13	
Galvanized sheets	34 22	12 5	22 28	11 28	21 17	52 29	23 24	25 41	. 6	
Plates, light,	10 3	11 22	<b>57</b> 34	<b>9</b> 33	13 8	22 13	<b>33</b> 33	<b>37</b> 33	8 14	. 7
Plates, heavy	<b>8</b> 3	17 16	<b>51</b> 42	8 32	16 7	18 8	23 27	<b>5</b> 0 38	5 15	4 12
Structural shapes	13 7	20 33	<b>36</b> 36	12 12	19 19	14 11	34 25	<b>38</b> 36	14 21	7
Welded tubing	11 11	26 17	<b>42</b> 39	16 28	<b>5</b> 5	<b>37</b> 29	32 21	<b>26</b> 43	5 7	
Seamless tubing	4	27 23	34 32	20 23	19 18	<b>33</b> 21	27 32	32 37	8 10	
Stainless sheets, strip	11 20	20 20	<b>69</b> 40	20		29 7	<b>53</b> 50	18 43		
Pig Iron (foundry)	12 18	10	67 64	9	11	26 11	<b>63</b> 89		11	
Copper, brass mill prod	10 6	17 13	<b>64</b> 50	<b>9</b> 19	12	11 21	<b>89</b> 36	29	14	
Aluminum products	<b>13</b> 5	<b>31</b> 35	<b>44</b> 50	<b>6</b> 10	6	33 11	<b>40</b> 45	21 44	6	

to give Pittsburgh a door opener into the field of flat rolled steel. Then came the plant expansions: New blooming-slabbing mill, enlargement of open hearths to 250 tons each and subsequent rebuilding of entire shop, new soaking pits, hot and cold strip mills at Allenport, and other expansion.

Better Shape — Now Pittsburgh finds itself with capacity enough to produce over 1.1 million tons of finished products of which 56 per cent is in sheet steel products, 25 per cent in seamless tubes and 19 per cent in wire and wire products.

With that mix, average selling price per ton is higher and Pittsburgh's operating rate can be maintained at least at the industry rate instead of fluctuating with ingot demand.



THE BOSS ROLLER TAKES A LOOK
. . at production from Pittsburgh Steel's new facilities

# **Automation Draws Tool Show Attention**

Exhibitors show they can scoff at recession talk when they have good product designs that stress automaticity and that are well merchandised

AUTOMATION equipment and automatic machines and controls drew a lion's share of attention at the American Society of Tool Engineers' exposition in Philadelphia's Convention Hall last week.

Millions of dollars worth of new production equipment and manufacturing processes were viewed by 35,000 top production planners. Many of the more than 500 exhibitors featured working installations of their product. A substantial number of installations made their premier appearance at the show as exhibitors showed models which have have not yet been installed in production lines.

Running the Gamut—Automatic, multidimension gaging equipment, machines with automatic cycles and automated materials handling systems were only part of the automation picture. Much of the tooling, controls and other process components were geared to a high-production theme.

A down-to-business atmosphere pervaded the exposition hall. Show-going tourists were conspicuous by their absence. Display visitors actually were seeking new ideas on low-cost, high-efficiency production.

Business Is Good—Exhibitors with good product designs, backed by aggressive merchandising, scoffed at recession talk.

"Our incoming orders this year are running 11 per cent ahead of the comparable 1953 period," says a manufacturer of hydraulic equipment.

"Our components line is far ahead of last year," reports another manufacturer.

"This new line of heat treating equipment is getting a remarkable reception. We believe incoming orders are running 15 to 20 per cent ahead of last year."

Several gage manufacturers find new competitive conditions are forcing manufacturers to new, more automatic equipment. "Automakers are pushing us for delivery on these new models. They



JOSEPH P. CROSBY
. . . new ASTE president

have to have them to keep pace with today's conditions."

Crosby Elected—New president of the association is Joseph P. Crosby, vice president in charge of sales, Lapointe Machine Tool Co., Hudson, Mass.

# Scrap Freight Rates Cut

Reduction of 15 per cent in railroad freight rates on iron and steel scrap will go into effect about mid-June in Eastern Territory (east of the Mississippi river and north of the Ohio and Potomac rivers), according to Institute of Scrap Iron & Steel.

Reduced rates will be applicable to a new minimum carload basis of 80,000 lb. Rates on the present minimum basis of 44,800 lb will not be adjusted, but the Institute is working on about 300 point-to-point reductions on the 44,800 lb basis. Also to be reduced about 15 per cent are switching rates in excess of \$1 per ton.

# Tool Orders Up, But Not Enough

New orders for machine tools rose to \$50.1 million in March, 1954, compared with \$47.2 million for the preceding month. But shipments also rose, to an index of 326.3 (1945-1947 = 100) in March from 323.1 in February, says the National Machine Tool Builders' Association. Net effect is a further reduction in backlogs of machine tool builders.

NMTBA's ratio of unfilled orders to demonstrated production rate stands at 4.6 to 1 for March, lowest point since March, 1950. That doesn't mean all machine tool builders' backlogs are less than five months because some special tool or heavy tool builders still have two year's work ahead while some standard tool makers are down to two weeks backlog.

# **NLRB Holds 913 Elections**

National Labor Relations Board during the first three months of 1954 conducted 913 elections to determine whether employees wanted union representation. Unions won out in 522 or 63 per cent of the elections. Of the 122,342 workers eligible to vote, 109,505 or 90 per cent participated, with 77 per cent of the voters favoring a union.

In the same period board members issued 63 decisions in unfair labor practice cases and 393 decisions in representation cases. The general counsel issued 144 complaints, 82 based on charges against employers, 38 against unions and 24 against both employers and unions.

# **Dollars for Europe's Industry**

European Coal & Steel Community will use its \$100-million loan from the State department to make loans to private coal, coke and iron ore companies for modernization of production facilities.

Specifically, the funds will be used to develop facilities for coal, coke and iron ore production, to provide additional housing for miners, to construct and modernize power stations at pit heads and to facilitate the economical use of low-grade coal.

U. S. took the occasion of the loan to tell the community that it is consulting with some of the member countries on the quota restrictions maintained by them on U. S. coal.

May 3, 1954 57

# Slide in Maunfacturers' Earnings Rate Continues, but at Slower Pace

(Per cent of net profit to sales after taxes, 1941-1953)

INDUSTRY	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951	1952	1953
Nonferrous Metals	12.3	12.1	9.0	8.6	6.4	10.2	12.4	11.7	8.2	9.8	8.8	7.7	6.9
Petroleum Products	10.1	7.4	6.8	7.0	7.0	9.4	11.1	12.9	9.9	10.8	11.5	10.5	10.6
Autos and Trucks	6.6	5.2	3.2	3.1	4.5	3.6	6.4	7.4	8.9	8.9	5.2	5.5	4.4
Railway Equipment	6.6	3.2	3.1	3.1	3.9	6.0	6.1	5.4	4.4	5.5	4.8	3.8	3.3
Iron and Steel	6.2	3.4	2.8	2.6	3.0	5.6	6.2	6.7	7.2	8.1	5.8	5.0	5.7
Aircraft and Parts	7.4	3.2	1.8	1.2	1.2	0.5	4.0	1.4	3.3	4.5	2.2	2.4	2.4
Total Manufacturing	6.5	4.3	3.6	3.3	3.9	6.0	7.1	7.5	6.8	7.7	6.2	5.4	5.3
												1	(.

Source: National City Bank of New York, "Economic Conditions," April of each year, 1942-1954.

# First Quarter Steel Profits Dip Less Than Sales

PROFITS DROPPED for the steel industry generally in first quarter, 1954, from the same period a year earlier, but they didn't take as big a dip as dollar sales.

For example, U. S. Steel Corp.'s sales dropped 10.5 per cent in 1954's first quarter from a year earlier, but net income dipped only 9.2 per cent (see the table). Republic Steel Corp.'s first quarter, 1954, sales went down 27 per cent from the year earlier period while the company's net income slipped only 19.5 per cent.

Two Cushions—One big cushion under slipping net income was elimination of excess profits tax, beginning in January, 1954. Another cushion was reduction of some high-cost factors of operation such as overtime payments.

First quarter, 1954, may not be the low water mark in steel ingot output, says Benjamin F. Fairless, U. S. Steel chairman, though steel buying is slightly on the uptrend. Mr. Fairless says U. S. Steel's first quarter output averaged 80.8 per cent with current operations running at about 70 per cent. Second quarter average output, both for U. S. Steel and the industry, should be slightly in excess of the 70 per cent mark, predicts Mr. Fairless. Inland Steel Co. had a 96 per cent ingot rate in the first quarter, standout performance for the large steel companies. Inland Chairman Clarence B. Randall was "hopeful" that rate could be sustained in the second quarter.

Spotty Returns—The table below reveals a wide variety of performances for first quarter, 1954. The picture of income down but not as much as dollar sales is true generally for the industry.

Jones & Laughlin Steel Corp.'s rise in net income can be explained largely by a changeover in accounting methods whereby the company deferred some tax reductions in first quarter, 1954. Pittsburgh Steel Co.'s net loss is explained as resulting from heavy starting-up expenses on the com-

pany's new 66-inch cold-rolled sheet mill (see p. 55).

# More Steel, Fewer Furnaces

The rapid increase in the nation's steelmaking capacity in recent years has been accompanied by an even greater rise in average capacity of furnaces, according to American Iron & Steel Institute.

Total annual capacity of openhearth furnaces rose 30 per cent to 109 million net tons from 1945 to Jan. 1, 1954. In this same period, number of open hearths was reduced from 990 to 934, reflecting a 37-per-cent boost to 160 tons in average furnace capacity per heat.

# Republic Steel Looks Ahead

Republic Steel Corp. has taken significant steps into two fields of activity with promising futures: Application of atomic power for steel making and titanium ore extraction.

In the first case, Republic engaged Dr. Robert P. Petersen—chief of Industrial and Production Reactors Branch, Division of Reactor Development, Atomic Energy Commission—to study and develop use of nuclear materials in operation of steel plants and in production of steel in general.

Republic also has acquired what is estimated to be one of the largest deposits of rutile (ore from which titanium is extracted) in the southern part of Mexico about 30 miles from Port Angelo on the Pacific coast. C. M. White, Republic president, says the company will probably contract for concentration of the ore to titanium sponge and may also offer the ore for sale.

# Sales and Income of Selected Steel Producers

	Net Sales 1	st Quarter*	Net Income	1st Quarter
	1954	1953	1954	1953
U. S. Steel Corp	\$830,826,211	\$927,925,909	\$44,830,376	\$49,375,952
Bethlehem Steel Corp			27,802,938	30,961,033
Republic Steel Corp	214,469,708	292,918,852	11,079,012	13,779,049
Jones & Laughlin Steel Corp.	127,880,000	158,914,000	5,821,000	5,642,000
Youngstown Sheet & Tube Co.	105,863,413	140,564,614	2,998,478	6,958,975
Armco Steel Corp.	131,346,000	143,397,000	9,137,226	7,767,045
Inland Steel Co	138,682,070	135,855,115	9,463,250	6,805,150
Colorado Fuel & Iron Corp.			771,456	2,177,372
Wheeling Steel Corp	42.018.378	53,002,824	1,135,386	2,962,388
Pittsburgh Steel Co	28,767,786	39,687,252	- 199,150t	1,971,820
Crucible Steel Co. of America			529,926	1,756,829
Granite City Steel Co			748,186	1,344,746
Allegheny Ludlum Steel Corp.	45,614,000	68,686,000	1,063,000	2,098,000
Copperweld Steel Co	12,416,580	24,303,806	282,347	994,550
Detroit Steel Corp	11,985,901	28,803,509	- 237,980t	1,692,546
Rotary Electric Steel Co			516,202	728,857
Carpenter Steel Co	10,352,365	14,144,021	504,340	901,872

\* Includes other revenues in some cases

† Net loss

# Aircraft Profits Grounded

Airframe makers' sales are excellent, but earnings lag behind other industries'

THE NATION'S 12 leading airframe manufacturers in 1953 had their best year, profitwise, on record, according to an Aircraft Industries Association survey.

Earnings reached \$116.6 million after payment of \$200.5 million in federal taxes. In 1952, the next best year, earnings were \$81.7 million and federal taxes, \$138.8 million.

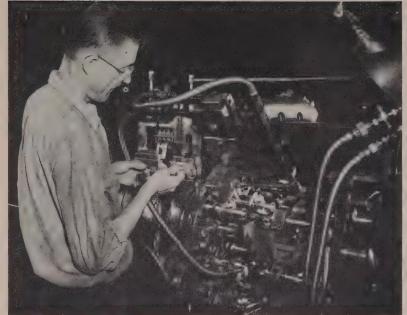
Despite this increase in earnings the 1953 earning rate compared to sales was 2.3 per cent, less than half the national average of 5.3 per cent for all manufacturing industries, as reported by National City Bank of New York (see the table on page 58).

Postwar High—Sales of the 12 companies hit \$5.1 billion for the year, a figure exceeded only by war years 1943 and 1944 when sales were \$5.2 billion and \$5.7 billion respectively. The 1953 total was more than a third higher than 1952's \$3.7 billion and almost 10 times the postwar low in 1946 of \$519.0 million.

Prospects for the airframe companies, at least for the coming year or two, continue bright. Unfilled orders amount to \$11.6 billion, substantially over the backlog of about \$11 billion reported a year ago. AIA says, "Although this backlog would provide for about two years' operations at the present volume, it is anticipated that there will be a gradual decline in production and consequently in sales and earnings beginning in 1955."

Big Risks—AIA also points to "tremendous risks that accompany the production of military aircraft." It cited the example of a major airframe company that last year lost 22 per cent of its net worth when a single contract was terminated.

Another problem for the companies is the need "to invest tremendous amounts of money in test facilities" to stay in the running for military design competition. Before the war only limited test facilities were needed.



Bethlehem Steel

# Screw Machine Parts Makers Measure Their Future

A BUSINESS DIP is when you tighten your belt; a recession is when you have no belt; a depression is when you have no pants.

Jobbing manufacturers of screw products differ as to which category they're in, but they agree their business may be 35 or 40 per cent down in 1954 from the estimated \$550 million done by commercial shops in 1953 and the \$543 million in 1952.

"We're in a dip," says W. N. Grass, president of M. J. Grass Screw Machine Products Co., Buffalo, who was elected president of the National Screw Machine Products Association at its annual meeting in Detroit. The sentiment of members and speakers at the meeting was: "We've had these dips before. From that experience, what can we do to cushion this one?" Here are suggestions:

- Survey your markets. Use your company, association or government statistics to learn where the bulk of customers or potential customers are. Don't go too far from home to get business.
- Survey your customers. If you make components, know the technological changes coming in the end product. Know your customers' seasonal buying habits and pick customers that will give you a steady volume. Know the minimum volume you can sell to make a profit.
- Analyze your sales management. Are all your salesmen earning their keep? Are you advertising enough?
- Know your break-even point.
- Keep labor costs segregated according to clerical, blue-collar and supervisory help to learn if indirect labor or unnecessary overtime costs are eating profits.
- Use this lull to examine all operations. Make cost figures more detailed. Catch up on postponed maintenance work.
- Take another look at secondary and supplementary operations. Those are often given little attention.
- <sup>©</sup> Check your salary schedules. When companies run into difficulties, they begin looking for new management. Your personnel may be ripe for a move if salary levels are inadequate.
- Re-examine your pricing techniques. You may be able to lower some quotations.
- Keep estimating records if you do business that way. Use them in making new estimates and never let your competitor do your estimating for you.



National Cash Register Co.

Presses like these turn out more than 750,000 parts a week as . . .

# Powdered Metals Take on a Man's Job

Some \$300 million worth a year are now being used by industry as powder metallurgy grows into a promising manhood. New applications climb

ANY GADGET-SEEKERS who showed up at the tenth annual meeting of the Metal Powder Association in Chicago last week were in for a disappointment.

Parts on display and equipment exhibited for making them were a sober reminder that powder metallurgy is a high-speed process that turns out hard working parts.

Fast Growing—That's why the metal powder business is one of the fastest growing industries. Five years ago, the U. S. was consuming about 1 million pounds of iron powder per month. In 1953, average monthly consumption was 2,203,180 pounds. More than half of it went into the manufacture of bearings and parts and the balance into friction materials, electronic applications and other uses.

Copper powder is now used at the rate of 2 million pounds per month, almost twice as much as five years ago. Principal applications: Self lubricating bearings, mechanical parts and friction materials.

Will Uses Keep Up?—Some 20 producers now turn out powder metallurgy grade metal powders in this country. Experts say that production of iron powder exceeds present demands by a sizable margin. For example, the new plant

of Hoeganaes Sponge Iron Corp., Riverton, N. Y., is designed for capacity of 5 million pounds of iron powder per month.

The military has been keeping a close eye on the industry since the end of World War II and is now using metal powders to make rotating bands for high velocity shells and other parts in fuse and fire control mechanisms. In case of war, an all-out effort in rotating bands alone would soon wipe out any surplus capacity.

Promise—But pm fabricators are quick to say that the most promising potential is in parts for consumer goods where low cost, elimination of machining, scrap saving, high production rate, close tolerances and tailored mechanical properties are big plus factors.

Today's total output comes from 100 companies who make parts for their own products and for other manufacturers or both.

New Applications — Yale & Towne Mfg. Co.'s Powdered Metal Products Div. sales manager, M. W. Isaacson, told STEEL, "Dollar volume is running 15 to 20 per cent under last year due to military cutbacks, a slump in television and reduced auto schedules. But new applications are being tested at a faster rate than ever before. We feel that powder metallurgy will thrive in the competitive times ahead."

Amplex Div., Chrysler Corp. had over 200 different parts on display, demonstrating average savings of 40 to 60 per cent over parts fabricated by conventional machining methods. For one slotted part savings ran as high as 96 per cent.

Paul E. Weingart, American Metal Co. Ltd., New York, was elected president Metal Powder Association for 1954-55. Wm. E. Cairnes, Radio Cores Inc., Oak Lawn, Ill., was named chairman of the board. Robert L. Ziegfeld was re-elected secretarytreasurer.

# More 'Sell' Will Head Off the Business Decline

TOUGHEN your selling muscles to fight the declining business trend. Plenty of purchasing power and the human desire to own are twin factors to aid you.

That's what Judson S. Sayre, new vice president, Borg-Warner Corp., Chicago, told a "More Jobs through Better Selling" symposium at the U. S. Chamber of Commerce convention in Washington, April 26-29.

Keep Practicing—The big need for selling, he said, is to revive the almost forgotten art of training salesmen. "Hard practice in selling, as in baseball, is required if you are going to keep on top." Business firms failing to conduct retraining programs, so that salesmen will have full knowledge of the products they sell, will get left behind.

Herman Nolen, vice president, McKesson & Robbins Inc., New York, told the C of C members that all that's required in 1954 to "more than offset" the reduced federal government spending is an increase of  $1\frac{1}{2}$  per cent in consumer spending.

Co-operate—He urged manufacturers to increase sales by supplying their wholesalers with promotional material to be forwarded to retailers. In all cases, the wholesaler should be backed by the manufacturer's advertising.

# Sales Forecasting Formula

Drug producer's technique can work for metalworkers too. Here are the steps

DEPENDABLE SALES forecasting is the hub of product planning and control.

That's the premise upon which Eli Lilly & Co. operates to: 1. Keep its products always available to consumers and 2. keep faith with employees by providing steady year-'round employment. The company is not a metalworking firm, but its techniques, described last week at American Management Association's meeting in Cleveland, are applicable to almost any industry.

The Factors—First forecasting step of Eli Lilly is to study past records of sales and the business situations and circumstances under which they were obtained. Step two is to study the size of the market to obtain a picture of the company's share of the total market.

Eli Lilly pegs its forecasting methods to consumer personal disposable income and has concluded that for every 10 per cent growth or decline in this income, sales of the drug product industry increase or decrease 5 per cent.

Arithmetic—Thus, sales of the entire industry are forecast by multiplying the consumer disposable income (weighted) by an estimated time trend in sales plotted from past records. Company sales are determined by multiplying the industry volume times the factor representing the company's time-trend share of the market.

"Forecasts of company sales, made a month or two before the beginning of each year, have been within 2 per cent of actual sales 13 to 14 months later," officials said. Estimates get more accurate as "we become more objective and less subjective."

New Product Forecasting—New product sales forecasting is more subjective. A new product is evaluated in terms of total market and sales possibilities. One or more of these approaches is used: 1. Estimate share of national market, 2. comparison with similar products, 3. comparison

with competing products, 4. study of the trend for use or need of the product.

With dependable forecasting, officials relate, the sales projection can be molded and fitted to production to comply with the requirements of a stable work force, seasonal trends, economical lot sizes, and inventory standards. And it is flexible enough to permit prompt addition of new items.

# **Leasing Pays Off**

Kearney & Trecker's renting plan has boosted sales, says company's president

LEASING of machine tools by Kearney & Trecker Corp., Milwaukee (See Steel, Apr. 12 p. 51), has resulted in an increase in outright sales, reports Francis J. Trecker, president.

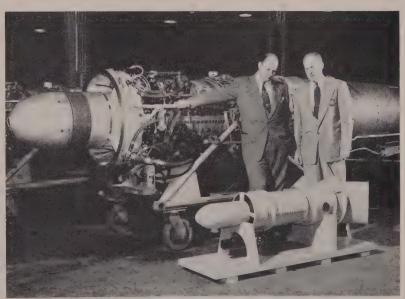
Leasing agreements of more than \$1 million were closed in the short time since the program started, Mr. Trecker told industrialists at the New England Council Industrial Opportunity Conference, Boston. Leasing negotiations for another \$1 million are in progress, and sales are about \$2 million.

Remove the Penalty - Also at

the conference, Alfred V. Bodine, president, Bodine Corp., Bridgeport, Conn., said the government should remove the penalty on modernization it now exacts. The use of depreciation as a taxing device often results in postponement of modernization and should be done away with. Incentive taxation is not the remedy, according to Mr. Bodine. The remedy is simply one of removing the penalty by the government.

In speaking about modernization, Henry A. Sharpe gave reasons why partial modernization often falls short of desired increased efficiency and lowered costs. The president of Brown & Sharpe Mfg. Co., Providence, R. I., said older machines often cannot keep pace with the new, either in quantity or quality. Once a decision to modernize is made, says a major surgery job is often best.

Draper Corp., Hopedale, Mass., told the conference about its program for controlled replacement of equipment. Long-range planning is possible through an annual equipment survey in all departments prior to budget estimates and by thorough investigation of all suggestions from the production line.



For Helicopters: Baby Brother of Sabre Jet Engine

Mockup of General Electric Co.'s new aircraft gas turbine developed for helicopter applications sits in front of "big brother" J47-17 jet engine which powers North American's F-86D Sabre. Small engine is about the size of an automobile's unit but will be six to eight times more powerful. It can be adapted as either a turbo-prop or turbo-jet to power fixed-wing aircraft

# Ceiling on Personal Income Tax? Idea Lacks Political Sex Appeal

THE OLD SAYING that it's easier to get rid of the seven-year itch than a tax once imposed came to mind last week when a Senate Judiciary subcommittee held a hearing on the constitutional amendment proposal to set a 25-per-cent personal income tax ceiling.

From the tenor of the testimony, it seems unlikely that the proposal can muster sufficient support to get it through this session of Congress. The chief opposition came from one of the country's big businessmen, Secretary of the Treasury George M. Humphrey.

# The Difficulties ...

"Adoption of a 25-per-cent tax rate on big incomes," said Mr. Humphrey, "would necessitate a reconstruction of the federal taxes . . . A financial breakdown could easily result." His attitude well may mark the death of the proposal because U. S. income tax collections must remain large for as far ahead as can be seen. Heavy armament expenditures appear to be on a near-permanent basis.

In addition, the 25-per-cent tax limit lacks political sex appeal. In the past 15 years, 27 state legislatures have petitioned Congress in favor of a 25-per-cent ceiling, but seven of those later rescinded their actions. So the proposal at this time is at least 12 states short of the 32 needed to launch a try at a constitutional amendment.

# The Argument . . .

The chief argument for a limit on income taxes is that the present rate on big incomes discourages economic expansion. It takes an investment of from \$8000 to \$20,000 to create a job in a factory, and the biggest source of risk capital in the past has been the big income earner. Because of taxes,

that big earner is fast disappearing.

STEEL checked with the Treasury department to determine



REP. CHAUNCEY W. REED . . . wants income tax limit

just how much of the big income actually is taken by the federal government. It found that on the average a single person with a \$50,000 annual income and no dependents is paying 52.8 per cent of that income for the year 1953. The married man with a \$50,000 income in 1953 and with two dependents is paying 37.8 per cent. The average actual tax of a 1953 income of \$500,000 is 85.9 per cent for a single person and 80.5 per cent for a married person with two dependents. The actual tax paid by a person, single or married, with or without dependents, who earned \$1,000,000 in 1953 is 87 per cent.

# The Proponents . . .

The leading proponent in Congress for the tax limit is Rep. Chauncey W. Reed (Rep., Ill.), chairman of the House Judiciary

Committee. Sen. Everett M. Dirksen (Rep., Ill.) is also enthusiastic, recalling that Karl Marx in his Communist Manifesto proposed heavy income taxes as one method to destroy the capitalistic system.

On the other hand, Sen. Harley M. Kilgore (Dem., W. Va.) and others contend that the proposed amendment would provide "short roads" to either Communism or Fascism. An AFL spokesman opposes the idea on the ground that it would lead directly to imposition of a federal sales tax.

# The Bill ...

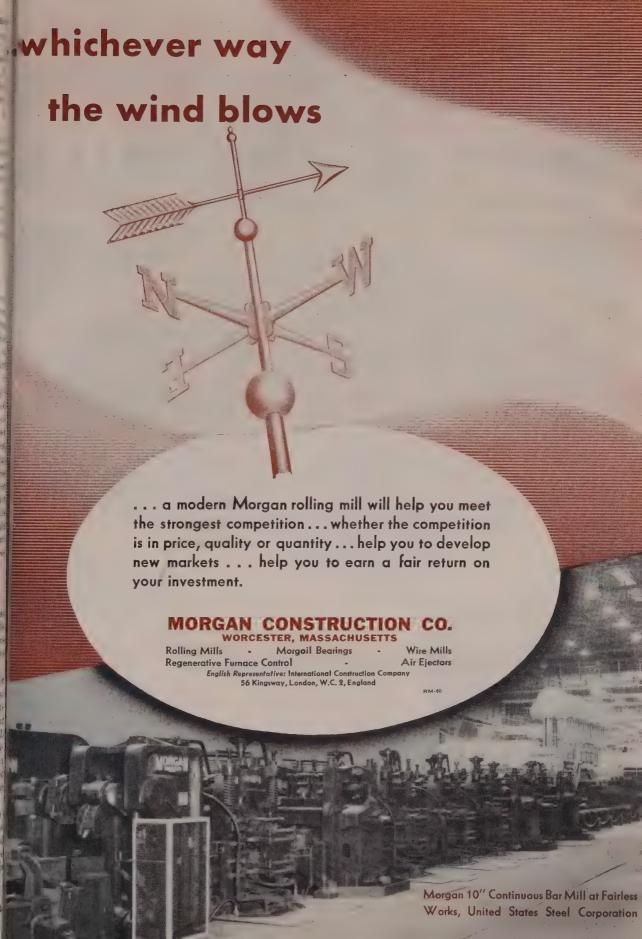
Mr. Reed's bill amends the constitution so as to limit congressional authority to levy income taxes on both individuals and corporations at rates in excess of 25 per cent. The 25-per-cent ceiling could be exceeded for a vear at a time only by a threefourths vote of both houses of Congress and only if the maximum rate in excess of 25 per cent does not exceed the lowest rate by more than 15 percentage points. For example, if Congress fixed the lowest rate at 20 per cent the maximum rate could not exceed 35 per cent. Under this resolution, Congress also would be deprived of the power to impose death and gift taxes; these would be left to the states.

### The Other Measures . . .

Two other measures have also been introduced on the same subject. They are more restrictive than Mr. Reed's bill and thus have even less chance of passage.

One proposed piece of legislation would amend the constitution so that the maximum aggregate rate of all taxes (including death and gift), duties, and excises "shall not exceed 25 per centum," except that in a war Congress by a three-fourths vote could exceed the 25-per-cent limit for a year at a time.

Another would deprive Congress of all power to levy income taxes except during a national emergency, or solely to reduce public debt and pay interest of such debt.



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Maximum Width frimmed coil

Bundle showing 2 widths

This new pickle line is a good example of the modern equipment used by Alan Wood in producing the highest possible steel quality.

Precision equipment such as this, and our policy of mine-to-mill undivided responsibility are your guarantee of always getting exactly what you want. The Alan Wood Continuous Mill produces steel from .059" to .500" to a maximum width 25½ inches, and is available in coils or cut lengths.

Our Eastern location, close to transportation, also means faster delivery . . . and often lower freight rates.

# ALAN WOOD STEEL COMPANY

CONSHOHOCKEN, PA.

steel making

experience



Thompson Products Inc.

WANTED: Die sinkers, toolmakers, machinists, electricians. Metropolitan newspapers are filled with these ads, yet unemployment is over 3.7 million.

Why this paradox? No fisherman would head for his favorite reef unless he had his bait as well as the right tackle. But many industry executives are buying new equipment, expanding operations and setting future goals with all needs carefully planned for, except one—skilled labor.

Today's Picture—Statistics prove it. Registered with the U. S. Bureau of Apprenticeship are approximately 166,800 apprentices; there are perhaps another 50,000 to 75,000 apprentices not registered. But the total in all probability does not exceed 250,000. Compare this with 8.2 million, the number of skilled workers in the nation, according to the 1950 census. Even if the 1:10 apprentice - to - journeyman ratio, which many feel is adequate, were

applied, we are still short 570,000 apprentices today.

Why isn't more action being taken? Here are the alleged reasons: "Apprentice programs cost too much." "Programs interfere with normal operations." "We can't get enough qualified applicants." "We train them and other companies buy them away from us." "We've always managed to get a journeyman when we needed one."

Forward Look—But a few forward-thinking manufacturers are taking a long-range view of their skilled labor requirements. Ford Motor Co., after a comprehensive study of its skilled labor situation, increased the number of trades in which it conducts training from 11 in 1942 to 24 today. In the last few years it has increased the number of locations where training is offered from 2 to 13 company plants. General Motors Corp. has boosted its number of apprentices from 1500 to 3000 since 1950. John

Volkert Metal Stampings Inc., New York, a small 140-employee plant is planning to increase its number of apprentices from 6 to 12 or more.

Apprenticeships are the best-known method of training skilled workers. And the skilled labor supply should be of vital concern to every executive.

Who'll Administer - How the program should be administeredjoint union-management or management alone—gets plenty of fire. A STEEL survey shows you can take your choice. Ford has conducted an organized apprenticeship program continuously since 1915 and for the past 12 years has operated the program with the assistance of a joint union-management committee. Ford feels that the majority of union officials connected with the program have, by recognizing the need for long-range planning, contributed to the success of the program, GM administers its program with the union participation related to issues involving the effect of the employment of apprentices on the employment of journeymen. American Steel & Wire Division, U. S. Steel Corp., has been operating a successful apprentice program without union participation since 1924; however, wage scales and training time are stated in the collective bargaining agreement.

If you think you're too small to carry a full apprentice load, perhaps the Cleveland electrical building trade plan may spark some cooperative thinking. An area committee composed of contractors and union representatives has charge of the apprentices. Related training is given the apprentice at the Cleveland day trade school. Practical training is gained by rotating apprentices from contractor to contractor each six months. Not only does the contractor not have to carry the full load of an apprentice program, but the apprentice is rotated according to contractor specialties so that he gets well-balanced training in all phases of his trade.

Government's Part—Government help is available too, although a frequent criticism is made that "standards of the Bureau of Apprenticeship don't fit our requirements." William J. Moore, assistant director who consults with steel, foundry and auto industries in setting up programs, has this to say: "The bureau's job is strictly one of assistance. Our recommended standards are those which have been developed through experience. We would be happy to help establish a set of standards suitable to meet the requirements of any industry which wants to set up apprentice training."

Lethargy — that's probably the biggest factor in the current lack of apprentices. Prime example is the recent survey sponsored by the Cleveland Board of Education. The school board has the money and building site for a new vocational school. It sent out questionaires to over 100 major companies in the area seeking recommendations to help set up a program designed to fit the needs of local industry. Courses given in public vocational schools to apprentices and workers



Fansteel Metallurgical Corp

# Industrywide or by individual companies—

# FIGURING APPRENTICE NEEDS IS SIMPLE ARITHMETIC

- 1. Start with the average number of skilled workers you require for normal operations and . . .
- 2. Subtract the average number of skilled workers you lose each year from *unavoidable causes*: death, retirement, promotion or transfer to other jobs. This gives you the average number of replacements you'll need to maintain your present skilled work force status.
- 3. Assuming that you are going to supply your own needs through an apprentice program, you'll need to determine how many apprentices you must have in training at all times to get the required replacement figure. Not all apprentices complete their training, so . . .
- 4. You must consider these factors when setting up your program:
  - (a) What proportion of apprentices will complete their training,
  - (b) What is the average time required to complete the course,
  - (c) How much time in the course does the average "drop-out" spend before leaving the program?

Suppose your company followed the national average: 1 out of every 4 apprentices quits, average training time is 4 years, and "dropouts" follow this ratio: 30% 1st year, 30% 2nd year, 28% 3rd year, 12% 4th year. To get 100 graduating journeymen per year, your training chart would look like this—

1st \	YEAR	2nd	YEAR	3rd \	<b>YEAR</b>	4th	YEAR
START	FINISH	START	FINISH	START	FINISH	START	FINISH
134	119	119	109	109	103	103	100
		134	119	119	109	109	103
				134	119	119	109
						134	119
							431

You would need 431 in training at all times to get 100 journeymen per year. Similarly, if you are a small company, to get 10 journeymen per year you need to be training 43 apprentices at all times.

# **U. S. Registered METALWORKING APPRENTICES\***

Sheet Metal (mostly constr.) 1949 1950 1951 1952 1953

9.715 9.661 8.667 7,664 8,333

**Machining Tradest** 

16,521 14,652 12,846 14,176 16,564

Others §

8.705 7,110 5,488 5,201 4,491

\* Includes only apprentices registered with Bureau of Apprenticeship, New York not included † Includes machinists, toolmakers, die sinkers, other machine shop

§ Includes jeweler and watchmaker, engraver, sheetmetal worker, molder and other foundry work, bailermaker, structural ironworker, other metalworking

Source: Bureau of Apprenticeship



# SALARY OPPORTUNITIES White Vs. Blue Collar Jobs

#### OFFICE:

Cost Accountant \$	93.88
General Accountant	06.74
General Clerk	87.35
Production Control Clerk	<b>79</b> .97
Purchase Follow-Up Clerk	84.75
Production Planning Clerk	90.18
Shipping Clerk	74.72
Shop Timekeeper	74.97
Stock Clerk	75.10
Stores Record Clerk	74.34

Average weekly earnings \$84.20\*

#### **FACTORY:**

Automatic Screw Machine Opr. \$	90.80
Die Sinker	130.00
Layout Man	87.60
Machinist (All around)	92.36
Milling Machine Opr.	84.40
Patternmaker	116.00
Planer Opr.	86.80
Punch Press Set-Up Man	85.20
Tool, Die & Gage Maker	98.88
Welder (Arc or Gas)	82.80

Average weekly earnings \$95.48\*

\* Based on 40-hour work week Source: Associated Industries of Cleveland. Survey of Cleveland-area plants only cost a company nothing, yet less than half returned the question-

Example - However, Cleveland has one of the nation's highest ratios of registered apprentices to population of any industrial area in the nation, Oscar R. Poole, Bureau of Apprenticeship area supervisor, says. Although over half of the more than 3500 apprentices in the area are in the building trades, the Cleveland foundry industry has one of the most active programs. Co-operating with the school system, the foundry industry purchased \$25,000 worth of equipment for the day trade school where apprentices get related training as well as much practical work. To stimulate more thinking among youth about apprenticeships, the industry co-operates with the Associated Industries of Cleveland each year in sponsoring a contest among apprentices. Cash awards are made and winners are eligible for national competition.

More industry co-operation with the public schools is an important factor in building the nation's apprentice program, apprentice administrators emphasize. This cooperation should take the form of assisting schools to advise students and setting up courses of study which will relate to the work a student expects to follow in adult life. Industry can do much to promote apprenticeships by participating in "career days." Theodore Haas, director of training, Thompson Products Inc., appears before student bodies each year explaining his company's apprentice opportunties.

Combating a Trend-Where are the best opportunities-in white collar or blue collar jobs? The accompanying table gives the facts, but it's industry's duty to combat the growing impression that "white collars" offer the most opportunities. National Tool & Die Manufacturers Association has a movie its members show to civic groups and students; excellent results have been reported to date. Another recommendation is to conduct tours for teachers, parents and students in plants showing them skilled men at work and explaining the importance of the work, the self-satisfaction and dignity of the occupation.

Good apprentice programs pay

for themselves. The consensus of apprentice training executives is that an apprentice begins to pay his own way starting in the third year. Most apprentice programs follow a general pattern - four years of training divided into different phases of practical work and related training. Your company should tailor its program to fit its needs. Barth Corp., Cleveland, has one apprentice instructor who handles the entire programboth practical work and related training—for ten apprentices. Some companies depend upon public schools for related training, others give their own, some call upon private institutions.

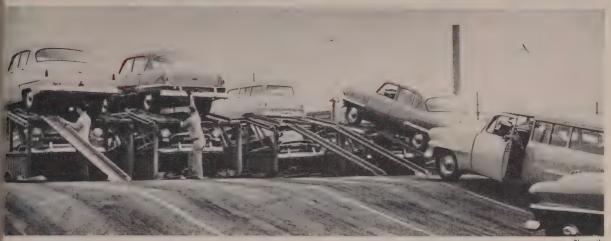
Simple Economics-The law of supply and demand should be enough to stimulate industry into action. Says one executive: "Companies have prided themselves on how much they've plowed back into their operations recently. But little of that plowing has been in the skilled labor field. If we don't start looking toward the future. what'll we have to pay for skilled labor ten years from now?"

Tally up the average age of your skilled men. Most officials are surprised to learn that the average is between 45 and 50. Couple this obvious need for replacements with the move toward automation which almost assuredly will mean that a greater ratio of skilled labor will be needed (STEEL, Apr. 12, p. 91), and the need for more apprentices becomes more striking than today's skilled labor stortage.

What Ratio? - At NTDMA's convention last October, members were told by the Subcommittee on Apprenticeship that a ratio of 1 apprentice to 5 journeymen is needed to maintain an adequate supply of tool and die makers. Many who have studied the apprentice situation claim that a 1:4 ratio is needed today.

Setting up an apprentice program is your company's insurance of an adequate skilled labor supply in the future. In addition, it'll pay these dividends: A better product from better workmanship, lower unit cost because of properly trained workers, greater employee stability because of greater worker loyalty. And you'll have a good source for future supervisors too.





Plymouth

Big Three's distribution edge over independents poses the question:

# Packard-Studebaker Merger? Their Dealers Need More Volume

DETROIT

AS NASH and Hudson first open their doors this morning as American Motors Corp., the question inevitably arises: Will Studebaker and Packard be the next to merge?

It is not a new question. More than one motor city Hedda Hopper has cunningly deduced that since Studebaker and Packard are the last single automakers there might be interest behind outward But with sincere indifference. apologies to the Studebaker and Packard public relations men who will have to deny this statement, STEEL last week learned from a hitherto reliable source that there's talk in banking and finance circles about Studebaker and Packard joining by fall.

Embryonic—No actual negotiations between the two companies have begun. But it is understood that a basic exploration of the pros and cons of such a move is now under way and that as a result of that investigation a proposal will be drafted. Should the proposal seem worthwhile to both

companies, negotiations will then begin, and the outcome will be some sort of joining of forces.

Reasons cited to STEEL by the spokesman as underlying merger investigation closely parallel those of George W. Mason in describing the Nash-Hudson benefits—increased financial strength, enlarged facilities and volume sales outlets. The first two items are those normally considered in merger prognostication, but the third points to a trend of increasing importance in the sales-minded auto industry.

The Reason—Today, perhaps more than ever before, the real end of the production line is the dealer. A backup in the dealer's hands ultimately means a backup on the assembly line and a shutdown. For cars, occupying a considerable space and subject to deterioration, cannot be put on shelves. They must move on into the consumer's garage to make room for more.

This situation has significance in the present production battles. Dealers have loudly shouted that they're being forced to take cars while factories have denied that anything of the sort happens. Actually, one dealer tells STEEL that in a sense the factory is right—the factory just tells the dealer how many cars it would be nice for him to sell that month. The dealer does not have to take the cars in much the same way that he does not have to stay in the auto business.

Slimmer Margins-In the prewar days, cars were specialty items which the purchaser usually bought for some reason other than price. Today cars are being turned out and sold like commodities rather than specialty items, and the new car dealer in major makes is getting his profit out of volume rather than high unit mar-Either the trade-in allowance is jacked up above market levels or the car price is pared to \$100 or less over dealer cost. Some car dealers have been reported working on \$25 per car, and you can make more than that retailing a new suit or washing machine.

The auto industry is moving ahead, therefore, on the premise that you must have volume distribution to sustain volume production. If the individual dealer sells enough cars and properly gears his operations to a volume selling job, it's possible that he will come out about the same in

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the end or even ahead. But plenty of dealers that can't handle volume are going to fold this year. One estimate is as high as 15 per cent.

Double Trouble — Independent dealers have a double sort of problem. They're still geared for speciality selling in what has become a commodity market. Handling only a few models of relatively low volume, they can't drop prices far and still stay in business. Their overhead is much the same as the turnover artist's and they've got to get more per unit to meet that, let alone make money.

That's where merger comes into the picture. Giving the dealer several makes of low volume may add up to the high volume of one hot line, figure the auto companies, just as adding Plymouth to the Dodge, Desoto and Chrysler dealerships was a smart move for Chrysler Corp. in the 1930s. Erosion of the dealer organization cuts down the distribution of the car if it continues long, in turn lowering production.

Needed: Volume—Jim Nance, perhaps more than any other auto executive, is acutely aware of the need for volume distribution to sustain volume production. Packard's manufacturing operations will be geared to its own line of cars, but the need for another line of cars to handle the dealer's volume needs is another matter.

It is this matter that lends credence to the report of the Sutdebaker-Packard merger explorations.

You may not soon walk into your Hudson-Kaiser-Nash-Packard-Studebaker-Willys dealer's, but the move is definitely in that direction.

### Car of the Week

The Chevrolet Corvette is a car that cannot fail to make a good first impression. From its relatively uncluttered styling to its beautifully appointed interior, the Corvette is a pleasing car in appearance. The seating position is comfortable and from the well-instrumented dash to the signal-seeking radio the car is a mag-

nificent combination of beauty and functionalism.

But to really know a car, you have to live with it a few days. And under that Corvette makeup are a few blemishes.

On a warm, bright day the Corvette sparkles. Acceleration

# Auto, Truck Output

U. S. and Canada

	1954	1953
January	594,789	614,000
February	573,801	628,017
March	672,485	752,149
April		782,453
May		685,390
June		713,206
July .		757,595
August		641,152
September		605,228
October		651,153
November		457,852
December		529,588
Total		7,817,783
Week Ended	1954	1953
Mar. 27	149,562	181,749
Apr. 3	146,498	170,567
Apr. 10	152,074	176,783
Apr. 17	148,559	162,171
Apr. 24	156,754	194,610
May 1	158,000*	184,800

Source: Ward's Automotive Reports
\*Estimated by STEEL,

is exciting and its handling and cornering characteristics are outstanding. The car does things easily and well. But it's a good thing the car is so easy to drive, for on a rainy day you have to drive and bail at the same time.

Never have we contacted a car that leaked more water in more places than a Corvette. At the end of a one-hour thunder shower the Corvette literally had over half an inch of water standing over the floor, and the top was up and the windows in place. And even after the rain was over, splash from the pavement quickly rewetted the floor as quickly as it could be bailed. Perhaps because it's an infant design, the Corvette gets its bottom wet badly.

As with many sports cars, putting the top up on a Corvette is not a one-man job, and with the top up the inside rear-view mirror stops just above car level

giving an excellent view of nothing in particular. Another drawback of the Corvette continues to be the absence of a functional front bumper. Aesthetically satisfying as all get out, the omission recently assisted in one of the most appalling bashes from a minor front end collision you'd ever want to see. The slowing Corvette bumped into the rear of another car stopped for a traffic light and the result looked like a plane crash.

Virtually lacking engine-braking due to the Powerglide transmission, you could only go deep into about two turns before your Corvette's brakes faded to nothing in a race.

Steering, while quick, could stand to be even more so for correction in cornering at speed. But be that as it may, the Corvette is more fun to drive than anything to come down the American pike in many a moon. And for a sports car, who can say that isn't enough?

### **Exhaust Notes**

On the subject of sports cars, it is rumored this week that Plymouth is planning production of its Belmont. More desirable in the opinion of most, would be the Dodge Firearrow or one of the Ghia jobs.

An informant at Ford Motor Co. reports that the firm is planning introduction of its 1955 models in October of this year. That statement checks with other reports. He then goes on to say that the 1956 models will be introduced in June, 1955. This statement, if true, could portend some startling changes in new car merchandising. And when you stop to think about it for a moment, a June introduction could have some definite advantages.

Ford Motor Company's engineering staff has developed the use of a new material for making die models and patterns which will speed the production of new cars. The process involves the substitution of laminated and impregnated mahogany board for the plain mahogany board normally used to make the wooden models from which steel production dies are formed.

Its Transmission Tells the Story!



Rough terrain and tight spots are no problems to Eimco's agile 105 Tractor-Loader with its new Unidrive transmission. And contributing to the Unidrive's advantages are 14 New Departure precision ball bearings. These New Departures mean positive, accurate positioning of the closely related moving parts. They carry radial, thrust and combination loads. They permit compact, rugged design . . . assure long life with no need for adjustment.

Whatever the bearing problem, New Departure can help you. When improving a product or designing a new one . . . talk to your New Departure engineer.

# NEW DEPARTURE

#### NEW DEPARTURE SALES ENGINEERING OFFICES-AT YOUR SERVICE

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CINCINNATI 2107 Carew Tower Main 5783
CLEVELAND 3113 W, 110th St. Winston 1-5454
INDIANAPOLIS 1357 W, 18th St. Imperial 4680
PITTSBURGH Cathedral Mansions Mayflower 1-8100
CHICAGO 332 So, Mich, Ave. Wabash 2-5875
DAVENPORT 2212 E, 12th St. Davenport 7-7522

 KANSAS CITY
 1021 E. Linwood Blvd.
 Valentine
 4939

 MILWAUKEE
 647 W. Virginia St.
 Broadway 6-9460

 ST. LOUIS
 3001 Washington Blvd.
 Franklin 6533

 LOS ANGELES
 5035 Gifford Ave.
 Logan 8-2301

 BERKELEY
 1716 Fourth St.
 Landscape 6-8750

 SEATTLE
 5000 First Ave., S.
 Lander 5920



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Timken 52100 steel tubing is excellent for most of your high quality hollow parts jobs. It's a through-hardening steel in moderate sections. It can be heat treated to file hardness and tempered back to any desired point. And it can be used in place of more expensive steels.

Available in sizes from 1" to 10½" O.D., Timken 52100 steel is used for hollow parts jobs like these:

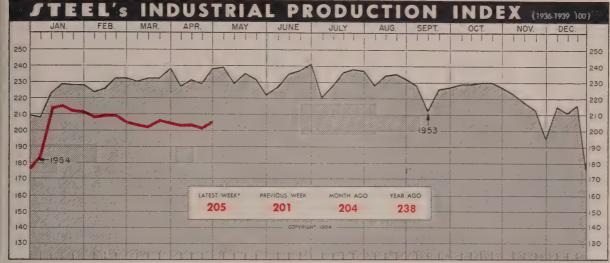
aircraft parts, ball bearing races, pump parts and plungers, collets, bushings, spindles, grinding machine parts, precision instruments, and dozens of other jobs.

The Timken Company is America's pioneer producer of 52100 tubing. And we're the only company that makes 52100 steel in tubing, bars and wire. Our unequaled experience assures you of uniform quality from tube to tube and heat to heat.

For immediate delivery of your less-than-mill quantity orders, write, wire or phone The Timken Roller Bearing Company, Steel and Tube Division, Canton 6, Ohio. Cable address: "TIMROSCO".



SPECIALISTS IN FINE ALLOY STEELS, GRAPHITIC TOOL STEELS AND SEAMLESS TUBING



\*Week ended Apr. 24

ased upon and weighted as follows. Steelworks. Operations 35%: Electric Power Output 23%; Freight Car Loadings 22%, and Automobile Assemblies (Ward's Reports) 20%.

### Purchasers See Second Month of Improvement

INDUSTRIAL BOOKINGS and production are up! The Business Survey Committee of the National Association of Purchasing Agents reports that these barometers are higher for the second consecutive month and that the pace is accelerating. A better order position is revealed by 43 per cent of the buyers surveyed, compared with 17 per cent still on the slide. Heftier production is listed by 33 per cent, while 18 per cent continue down. Although the individual changes are not large, the Survey Committee believes that business is firming up and will show a gradual improvement in the second quarter. The survey also notes a greater strength in prices, particularly in nonferrous metals, stimulated by the announcement of government stockpiling plans.

#### STEEL's Index Jumps ...

During the latest week, STEEL's industrial production index rose to the highest level in over a month. Responding to stepped-up automobile outturn and a gain in steel output, STEEL's index jumped 4 percentage points above the preceding week to a preliminary 205

per cent of the 1936-1939 average. At the present level, industrial production is 33 points below the comparable week last year.

#### Auto Output Climbs . . .

Rising to their highest weekly output this year, U. S. car and truck manufacturers turned out an estimated 146,092 units in the week ended Apr. 24. Increased schedules at General Motors and Ford accounted for the upturn, Ward's Automotive Reports relates. A 50-year production high of 13,319 units was attained by Buick.

#### GM Sets Record . . .

The recent upward revision in production by General Motors follows the best first-quarter passenger car business in its history. Harlow H. Curtice, president, says that GM's domestic outturn of 706,000 passenger cars in the first quarter established a new record, 2 per cent higher than the previous one set in 1953.

Sales of all GM commercial and defense products in the first three months totaled \$2410 million, only \$137 million less than in the comparable months last year. The slump in defense business primarily accounted for this decline. While first-quarter defense volume was off 13 per cent, commercial business was down only 2 per cent from last year's levels.

#### A New Record? . . .

With retail deliveries by automobile dealers in the first quarter approximating 95 per cent of the same period last year and with current deliveries running ahead of the comparable period, Mr. Curtice estimates that GM's total second-quarter business will be 10 to 15 per cent better than in the first quarter.

#### Pacesetters . . .

Sales of some manufacturers were up in the first quarter, counter to the general trend. General Electric Co. says that sales of its small appliance division ran 15 per cent above those in the same quarter in 1953. Shipments from Westinghouse Electric Corp.'s appliance division in the first three months rose 5 per cent above the comparable period of last year, and John

May 3, 1954 73



#### Wholesale Price Index (1947-1949=100)

	1954	1953	1952
Jan.	 110.9	109.9	113.0
Feb.	 110.5	109.6	112.6
Mar.	 110.6	110.0	112.3
Apr.	 	109.4	111.8
May	 	109.8	111.6
June	 	109.5	111.3
July	 	110.9	111.8
Aug.	 	110.6	112.2
Sept.	 	111.0	111.7
Oct.	 	110.2	111.1
Nov.	 	109.8	110.7
Dec.	 	110.1	109.6

U. S. Bureau of Labor Statistics.

# | INDUSTRIAL PRODUCTION INDEX | FEDERAL RESERVE BOARD | THIS |

#### Industrial Production Index

1947-1949-100

	Total		Primary		Metal	
	Production		Metals		Fabricating	
	1954	1953	1954	1953	1954	1953
Jan.	125	134	111	135	155	168
Feb.	124	134	108	137	152	168
Mar.	123	135	101	136	148	168
Apr.		136		136		169
May		137		139		169
June		136		137		168
July		137		136		171
Aug.		136		137		171
Sept.		133		130		166
Oct.		132		128		165
Nov.		129		122		159
Dec.		126		113		156
Avg.		134		132		167

Federal Reserve Board



#### Durable Goods Orders, Sales

In Millions of Dollars\*

	New (	orders	Sales		
	1954	1953	1954	1953	
Jan.	 8,475	12,454	11,580	12,508	
Feb.	 9,531	12,416	11,366	12,666	
Mar.		12,520		13,116	
Apr.	 	12,702		13,398	
May	 	13.101		13,148	
June	 	12,392		13,166	
July		11,600		13,410	
Aug.	 	10,139		12,730	
Sept.	 	10,110		12,698	
Oct.	 	9.677		12,376	
Nov.	 	9.631		11,867	
Dec.		9.567		11,576	

\*Seasonally adjusted. U, S, Bureau of Business Economics.



#### Foundry Equipment Orders

		Index		Value		
	(1	(1947-1949=100)		Thousands		
		1954	1953	1954	1953	
Jan.		173.8	99.6	\$2,463	\$1,418	
Feb.		99.9	97.5	1,423	1,388	
Mar.			132.2		1,882	
Apr.			111.8		1,592	
May			182.1		2,594	
June			156.4		2,227	
July			158.9		2,263	
Aug.			235.5		3,353	
Sept.			127.7		1,818	
Oct.			87.1		1,241	
Nov.			149.4		2,128	
Dec.			160.8		2.290	

Foundry Equipment Mfrs. Assn.

Charts Copyright 1954 STEEL

#### Issue Dates on other FACTS and FIGURES Published by STEEL

Construction Apr. 26 Employ., Metalwk. Apr. 5 Employ., Steel Apr. 26 Fab. Struc, Steel Apr. 19 Freight Cars Apr. 19 Freight Cars Apr. 19 Gears Apr. 19 Gray Iron Castings, Mar. 15 Ranges, Elec Apr. 19 Ranges, Gas Mar. 22 Ranges, Gas Mar. 22 Ranges, Gas Mar. 22	Steel CastingsMar. 15 Steel ForgingsMar. 8 Steel ShipmentsApr. 12 Vacuum CleanersApr. 5 Wages, MetalwkMar. 1 WashersApr. 12
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A. Ashbaugh, vice president of the division, says that a sharper increase is indicated for the present quarter.

#### Profits—the Final Test . . .

Earnings also rose for many corporations-partially due to the expiration of the excess profits tax. International Business Machines Corp. reports net income after taxes of \$10,134,429 for the first quarter. This is equivalent to \$3.09 a share, compared with \$2.29 a share on the same capitalization last year. Monarch Machine Tool Co. reports net profit for the first quarter totaled \$540,213 after all charges including federal income tax. That compares with net earnings of only \$377,788 for first quarter, 1953. Jerome A. Raterman, president, states that orders continue to come in at a rate that assures his company of a profitable operation.

#### **Better Business Sighted...**

Many other corporations anticipate that sales and earnings will increase during the second quarter. On the basis of current shipping orders, Borg-Warner Corp. has good reason to expect a material rise in sales and a gratifying climb in earnings, compared to the second quarter of last year. R. C. Ingersoll, president, points out that automotive production is certain to continue on a very satisfactory level and that current sales of farm equipment components and home appliances have shown a considerable increase.

Sales of Consolidated Mining & Smelting Co. of Canada Ltd. were higher in the first quarter than in the comparable period a year ago. R. E. Stavert, president, also says that the recent reduction in zinc output by producers has improved the statistical position of this metal.

During March, makers of copper products recorded a substantial pickup in activity. Bookings for new orders were the best since June, 1953, and shipments were the highest since last October. New orders called for the use of 104,734 tons of refined copper, the largest tonnage ordered since June,

BAROMETERS OF BUSINESS INDUSTRY	LATEST	PRIOR	YEAR
	PERIOD	WEEK	AGO
Steel Ingot Production (1000 net tons) <sup>2</sup> Electric Power Distributed (million kwhr). Bitum. Coal Output (daily av.—1000 tons) Petroleum Production (daily av.—1000 bbls) Construction Volume (ENR—millions) Automobile, Truck Output (Ward's—units).	1,634	1,622	2,276
	8,257	8,345	8,016
	1,115	1,110	1,450
	6,575 <sup>1</sup>	6,589	6,278
	\$248.0	\$306.6	\$275.0
	156,754	148,559	194,610
Freight Car Loadings (unit—1000 cars) Business Failures (Dun & Bradstreet, no.). Currency in Circulation (millions) <sup>3</sup> . Dept. Store Sales (changes from year ago) <sup>3</sup> FINANCE	$\begin{array}{c} 616^1 \\ 229 \\ \$29,673 \\ +12\% \end{array}$	613 198 \$29,793 +16%	780 159 \$29,722 +8%
Bank Clearings (Dun & Bradstreet, millions) Federal Gross Debt (billions) Bond Volume, NYSE (millions) Stocks Sales, NYSE (thousands of shares) Loans and Investments (billions) <sup>4</sup> U. S. Gov't Obligations Held (billions) <sup>4</sup>	\$17,987	\$17,299	\$18,391
	\$269.9	\$269.9	\$264.3
	\$17.4	\$14.9	\$20.4
	9,896	8,345	7,863
	\$78.7	\$79.1	\$76.9
	\$31.3	\$31.5	\$29.6
STEEL's Finished Steel Price Index <sup>5</sup>	189.74	189.74	181.31
STEEL's Nonferrous Metal Price Index <sup>6</sup>	213.9	214.2	222.7
All Commodities <sup>7</sup>	111.3	111.0	109.4
Commodities Other Than Farm & Foods <sup>7</sup>	114.6	114.5	113.2

\*Dates on request. <sup>1</sup>Preliminary. <sup>2</sup>Weekly capacities, net tons: 1954, 2,384,549. 1953, 2,254,459. <sup>4</sup>Pederal Reserve Board. <sup>4</sup>Member banks, Federal Reserve System. <sup>6</sup>1935-1939—100. <sup>6</sup>1936-1939—100. <sup>7</sup>Bureau of Labor Statistics Index, 1947-1949—100.

1953, while shipments used up 103,-846 tons of the metal.

#### A Clear Example . . .

One of the clearest examples of what the end of excess profits tax has done to net earnings is seen in the first-quarter report from General Electric Co. Sales volume was \$715.6 million, off the record set last year by 8 per cent. Yet earnings of \$48 million were ahead of last year's first quarter by 42 per cent. Ralph J. Cordiner, president of GE, says the substantial increase was made possible by elimination this year of the unpopular tax.

#### Construction Continues Pace . . .

Construction continues to give reason for optimism. Dun & Bradstreet reports that building permits issued in 215 cities during March amounted to about \$517.4-million, which was the highest ever recorded for March and the largest monthly total since August, 1950. Permits for the first quarter in those cities were 7.4 per cent above year-ago figures and only 1.1 per cent below the all-time high set in 1951. The

cumulative total for the three months is almost \$1.2 billion.

Further substantiating the reports of high construction rates are the continuing heavy shipments of fabricated structural steel as reported by American Institute of Steel Construction. March, with estimated shipments of 285,365 tons, surpassed the corresponding month last year for the third straight month. That is also an increase of about 32,000 tons over February, which itself was considered a good month.

#### Easy Money Policy To Stay . . .

Winfield W. Riefler, assistant to the chairman of the Federal Reserve Board of Governors, speaking before a businessmen's conference in Chicago, said the Board's easy-money policy has not reversed the business downturn as it was intended to do. But in areas of the economy which have shown firmness, he said, the policy has been an important factor. Nevertheless, A. L. Mills, chairman of the board, told the U.S. Chamber of Commerce in Washington last week that the policy should continue "today and into the foreseeable future."

# HOW MARVELLUM O ®

Speeds Assembly of Diesel-Electric Locomotives

WRAP



Part arrives at assembly plant in steel-strapped skidded carton ready for stand-by storage.



Removal of carton top reveals rust-preventive VPI cover sheet held in place by top blocking.

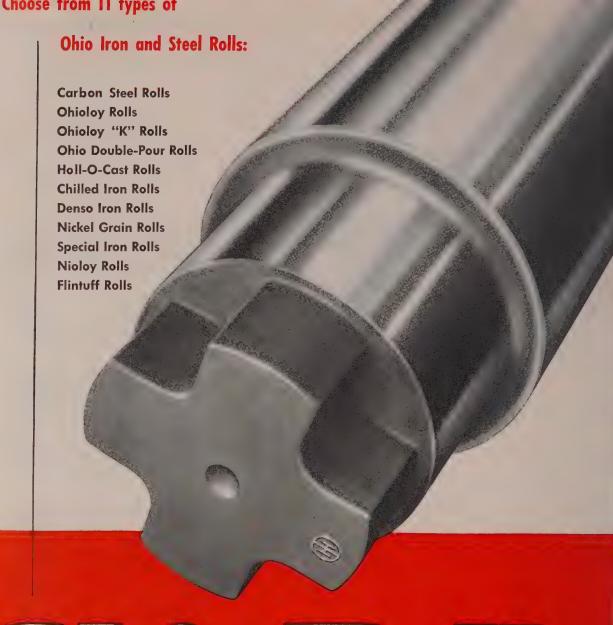


Gear, on bottom sheet of VPI paper, is dean, bright and ready for immediate installation. No messy, time-consuming degreasing delays the assembly of General Electric diesel-electric locomotives.

In shipment and storage, Marvellum VPI Wrap positively protects parts against rust. A special coating on the paper vaporizes and forms an invisible protective film around the item packed, preventing corrosion. Wherever prevention of rust is a factor, you can save time and money with VPI. To get all the facts about this revolutionary protective wrap, write for our fully descriptive booklet and generous VPI sample. Our technicians will be glad to discuss corrosion problems peculiar to your plant.

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# ORO ROLL INDUSTRY



THE OHIO STEEL FOUNDRY CO.

SPRINGFIELD, OHIO

Plants at Lima and Springfield, Ohio



MELVIN W. PAULY
. . . Lunkenheimer gen. mgr.-sales



FREDERICK W. McINTYRE Jr. . . . Reed-Prentice president



DON WATKINS
. . , joins Continental Foundry & Machine

Melvin W. Pauly was made general sales manager and H. H. Layritz assistant general sales manager of Lunkenheimer Co., Cincinnati. Mr. Pauly joined the company in 1950 as New York manager and later became sales manager, eastern division.

George Doig was appointed sales manager of Numatics Operating Valves, Milford, Mich. He recently resigned from J. N. Fauver Co., Detroit, where he had been local sales engineer for six years.

Phoenix Mfg. Co. appointed Lawrence D. Toolan sales manager of its forging division located at Catasauqua, Pa. He recently served as district manager for American District Steam Co.

W. T. Sauer was made assistant export manager of Champion Spark Plug Co., Toledo, O., to succeed the late E. C. Badger Jr.

Consolidated Vultee Aircraft Corp., San Diego, Calif., appointed R. R. Hoover chief project engineer and W. S. Ivans chief electronic engineer.

Walter E. Schroeder is now chief engineer of Colonial Iron Works Co., Cleveland. He formerly was district chief in charge of Canadian activities of Stone & Webster Engineering Corp. at Toronto, Ont., and Boston. Frederick W. McIntyre Jr., vice president, was elected president of Reed-Prentice Corp., Worcester, Mass. He succeeds Frederick W. McIntyre Sr., now chairman of the board. Donald H. Dalbeck, controller-treasurer, was elected a director and vice president. Also elected a vice president is Iver G. Freeman who has been with Norton Co. for 38 years.

Metal & Thermit Corp., New York, appointed Frank J. O'Brien Jr. general sales manager. He joined the firm in 1951 as manager of its scrap division and has been a vice president since 1952. John B. Tinnen, formerly vice president-general sales manager, continues as chief executive sales officer of the company with extended activities including general administration and planning and programming for company expansion. H. W. Buchanan Jr. was appointed sales manager, chemical division.

Paul S. Landis was appointed an assistant manager, sheet and strip products, for Jones & Laughlin Steel Corp., Pittsburgh. He formerly was manager, plate sales, for Colorado Fuel & Iron, Claymont, Del., formerly Worth Steel Co.

Frank R. Osborne was made general manager of Mission Appliance Corp., Hawthorne, Calif.

Don Watkins joined Continental Foundry & Machine Co., East Chicago, Ind., as a vice president. He will have headquarters in company offices at Pittsburgh. Associated with the steel industry for over 30 years, Mr. Watkins has served in an executive capacity with a number of companies in the industry and in allied fields.

American Emery Wheel Works, Providence, R. I., elected Frederick J. Darby president and works manager, Harold O. Skoog vice president and ceramic engineer, Torrey Allen treasurer and general manager and W. W. Turner secretary and sales manager. Arthur L. Pierce, secretary-treasurer and general manager, retired after 46 years with the company.

Harry E. Lewis was made general manager of the insulation division of M. H. Detrick Co., Chicago. He formerly was executive director of the Industrial Mineral Fiber Institute Inc.

Richard M. Morgan, formerly a design engineer for Harris-Seybold-Potter Co. and a tooling engineer with General Motors Corp., joined Miller Fluid Power Co., Melrose Park, Ill. He will be in charge of production tooling, production engineering and plant layout.

Ingalls Iron Works Co., Birming-ham, appointed Richard G. Haas



WILLIAM V. O'BRIEN



GEORGE E. BURENS



HAROLD E. STRANG

. . . three newly elected vice presidents of General Electric Co.

resident manager of its Verona, Pa., fabricating plant.

Newly elected vice presidents of General Electric Co. are William V. O'Brien, George E. Burens and Harold E. Strang. General managers of their respective divisions, Mr. O'Brien at New York heads the apparatus sales, Mr. Burens at Philadelphia the switchgear and control and Mr. Strang at Lynn, Mass., the measurements and industrial products.

Barber-Colman Co., Rockford, Ill., appointed Howard A. Nelson administrative assistant to the sales manager in its machine and small tool divisions. Nels O. Thornbloom was made chief engineer-machine tool sales, and S. J. Johnson chief engineer, small tool division.

Walton H. Hofmann, assistant chief engineer of Bethlehem Steel Co.'s Johnstown, Pa., steel plant, was transferred to San Francisco as chief engineer of construction for Bethlehem Pacific Coast Steel Corp.'s steel division.

Paul W. Hook, treasurer of Wellman Bronze & Aluminum Co., Cleveland, was added to the board of directors.

Edward C. Clark was placed in charge of General Electric Co.'s activity in the gas industry. He will co-ordinate activities in the use of gas turbines in various industries with particular emphasis

on natural gas pipeline pumping.

Link-Belt Co. appointed Rodney F. Coltart and Benjamin M. Prestholt sales managers on the West Coast. Formerly sales engineers, Mr. Coltart has headquarters at the San Francisco plant and Mr. Prestholt at the Los Angeles plant.

Edward H. Wheeler, chief engineer, Standard Pressed Steel Co., Jenkintown, Pa., was made manager of the forging division in charge of hot and cold headers, production thread rollers and the facing and drill, broach and knurl sections. John M. Sherman is now

chief engineer. He formerly was manager of quality control.

Frank W. Davis was named chief engineer of the Ft. Worth, Tex., division of Consolidated Vultee Aircraft Corp. to replace J. W. Larson, resigned.

Shieldalloy Corp., division of Metallurg Inc., New York, elected Edward H. Stann treasurer and S. W. Madsen assistant vice president.

California Steel Products Co., Richmond, Calif., recently acquired by American District Steam Co. Inc., appointed Harold W. Dornsife



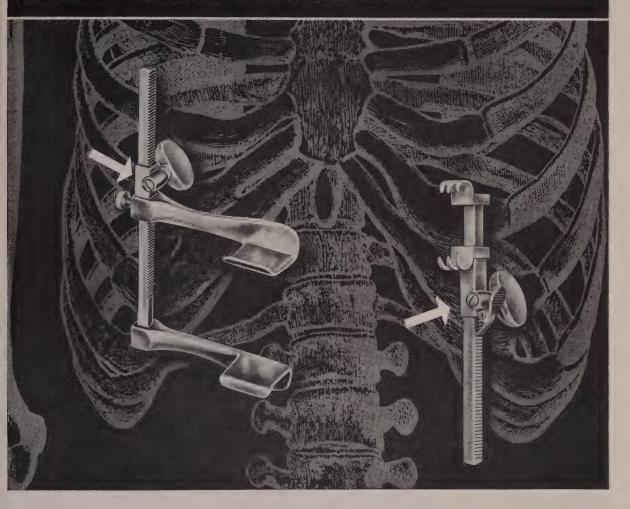
EDWARD H. WHEELER



JOHN M. SHERMAN

. . . SPS forging div. manager and chief engineer

### How to simplify a moving problem



It's a safe bet you've never met these two devices before. On the left is a Tuffier Rib Retractor; on the right, a Bailey Rib Contractor. Both are made by George P. Pilling & Son Co., famed surgical instrument makers of Philadelphia.

The retractor is used by the surgeon to move ribs apart; the contractor to move ribs back to normal position after an operation.

Among the many problems that cropped up in the construction of these instruments was the design of the pinion rod supports (arrows) that slide on the square racks. One solution was to broach a square hole in bar stock, but the cost was high.

Pilling discovered Superior could draw square tubing from type 304 stainless steel to the close I.D. tolerance they required. Superior stainless steel tubing resists corrosion, has no plating to wear off, silver-solders without difficulty.

Superior square tubing is only one of a wide variety of round and shaped tubing made by Superior in up to 55 analyses. And every length or coil of Superior tubing is backed by Superior tubemanship—production and research that make a real difference when you're in a jam. Superior Tube Company, 2005 Germantown Ave., Norristown, Pa.

Round and Shaped Tubing Available in Carbon, Alloy, and Stainless Steels; Nickel and Nickel Alloys; Beryllium Copper; Titanium; Zirconium.



West Coast: Pacific Tube Company, 5710 Smithway St., Los Angeles 22, Calif., RAymond 3-1331

THE BIG All analyses .010" to %" O.D.

Certain analyses in Light Walls up to 21/2"



OLIVER FULLER
. . . heads new Harnischfeger div.

vice president and general manager. He was project manager at C. F. Braun & Co.

In expansion of activities in its line of electrical products Harnischfeger Corp. has placed Oliver Fuller in charge of a new division at Milwaukee established to handle sales of P&H electrical equipment. Mr. Fuller formerly was with P&H welder and excavator manufacturing at Escanaba, Mich. He joined Harnischfeger early in 1946.

W. P. Drake was named president of the new Industrial Chemicals Division of Pennsylvania Salt Mfg. Co., Philadelphia.

James G. Wiley, formerly with the Dayton, O., district office of Detroit Steel Corp., joined Federal Steel Corp., Dayton.



WALDEMAR NAUJOKS . . . joins Globe Forge Inc.

Waldemar Naujoks was elected vice president and general manager, Globe Forge Inc., Syracuse, N. Y. He joins Globe after five years as special projects engineer at Ladish Co., Cudahy, Wis. The preceding 20 years he spent with Steel Improvement & Forge Co., Cleveland, 12 of them as chief engineer.

E. S. Russey, president and general manager of Borg-Warner Corp.'s Warner Gear Division, Chicago, was elected a director of B-W to succeed J. Lester Dryden, retired.

Warren C. Dunn was made supervisor of product sales in the general apparatus sales department of Union Switch & Signal Division, Westinghouse Air Brake Co., at Swissdale, Pa.



WILLIAM D. HAHN
. . . heads City Auto Stamping Co.

William D. Hahn, former treasurer, City Auto Stamping Co., Toledo, O., was elected president of the company and of its subsidiary, City Machine & Tool Co. He succeeds the late Charles H. Bigelow.

Robert M. Simpson was named assistant manager of Crucible Steel Co. of America's San Francisco sales branch.

Henry C. Buckingham, president, Thor Corp., Chicago, will also act as chairman of the board. He succeeds Raymond J. Hurley as chief executive officer. Mr. Hurley resigned as chairman and as a director of the company.

Penn Controls Inc., Goshen, Ind., elected Ralph Penn president to succeed Albert Penn, now chairman of the board.

#### OBITUARIES...

Redondo Newhall, 55, vice president and Chicago district manager of Reed & Prince Mfg. Co., Worcester, Mass., died Apr. 17.

Manning W. Hodgdon, 58, manager of forging sales for Aluminum Co. of America at Cleveland, died Apr.

Samuel Botwinik, 54, president, Botwinik Bros., Worcester, Mass., died Apr. 17.

George H. Oltmann, 48, assistant sales manager in the merchant

products division at Cleveland for American Steel & Wire Division, U. S. Steel Corp., died Apr. 20.

Harold E. Smith, 64, president, T. L. Smith Co., Milwaukee, died Apr. 20 while vacationing in Paris, France.

Frank M. Giefer, president, Twin City Steel Mfg. Co., Minneapolis, died Apr. 11.

William S. Newell, 76, chairman of Bath Iron Works, Bath, Me., died Apr. 18.

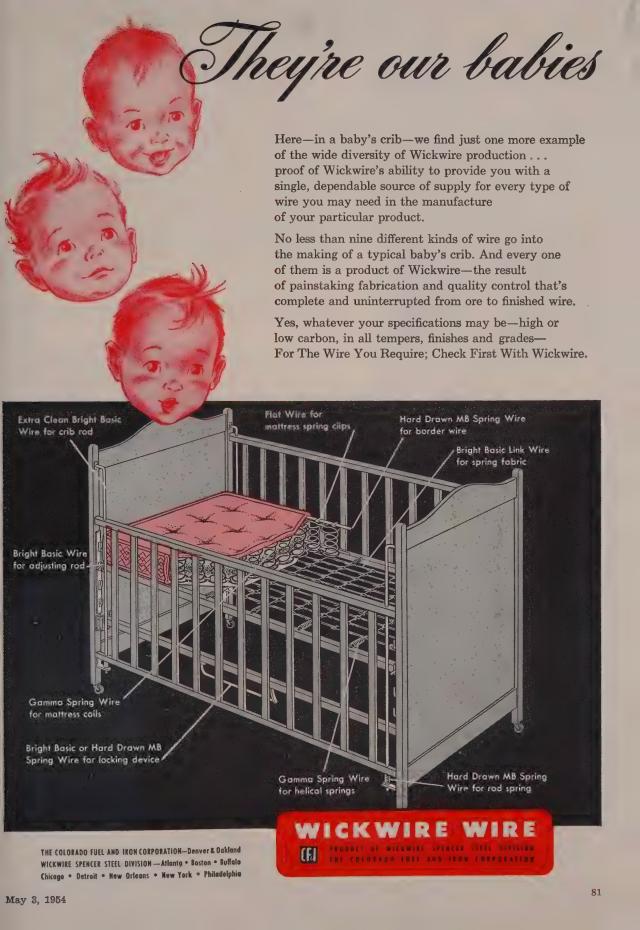
Raymond A. Morris, vice presi-

dent-secretary, Dominion Foundries & Steel Ltd., Hamilton, Ont., died Apr. 14.

Philip O. Geier, 77, chairman of Cincinnati Milling Machine Co., Cincinnati, from 1934 until his retirement in 1946, died Apr. 21.

E. W./Weiffenbach, 43, head of Cass Products Co., Buffalo, died Apr. 16.

Floyd L. Greene, 65, who retired eight months ago from General Refractories Co. where he served as chairman and president, died Apr. 14 in Altoona, Pa.



J&L STEEL

#### JAL-TREAD

for safe

#### permanent flooring

Jal-Tread floor plate combines the strength and durability of high quality steel in an exclusive checkerboard pattern scientifically designed for *safety*.

Whatever your application . . . in new construction . . . new equipment . . . or replacement jobs, Jal-Tread will assure you of these advantages:

SAFE FOOTING—300 miniature squares per square foot—all of uniform height—provide, maximum linear friction surface that protects you against lost time accidents.

EASY FABRICATION — Jal-Tread's straight line pattern simplifies welding, flanging, shearing, bending, punching, and drilling operations. Experience shows that Jal-Tread can be cold-formed on standard plate bending machines.

**EASY CLEANING**—Jal-Tread's straight line gutter pattern permits quick, thorough sweeping and draining in any direction.

ATTRACTIVE APPEARANCE

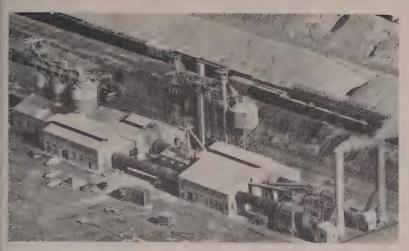
Jal-Tread's exclusive checkerboard pattern gives a distinctive, neat appearance in all its applications. For safe, long-lasting flooring, specify J&L Jal-Tread . . . the only true checkerboard floor plate.

Available at leading distributors everywhere

Jones 4 Laughlin

STEEL CORPORATION - Pittsburgh

J&L STEEL



Marblehead Lime Co.'s Thornton, III., plant . . .

#### New Facility for Producing Clinkered Dolomite

A PLANT which affords high-quality control in production of clinkered dolomite has been put into full operation at Thornton, Ill., by Marblehead Lime Co., a subsidiary of Material Service Corp., Chicago. Clinkered dolomite is a refractory material used to maintain the bottoms of basic open-hearth and electric furnaces in the production of steel.

Lester Crown, vice president, says the second of the plant's two gigantic rotary kilns was added because of an increasing use of clinkered dolomite by the steel producers, the proximity of the plant and the adjacent Thornton quarry to one of the nation's leading steel producing centers, and the Thornton quarry's large deposit of high-quality dolomitic limestone.

Plant Features—Unique features of the plant are: A control system which permits one man to visually and manually control the entire operation; a specially engineered dynamometer drive system which controls the kiln's rotation speed and accurately proportions the limestone, iron oxide and coal; an induced draft fan for top combustion efficiency; and a chilling system which produces a clinkered dolomite with better storage qualities.

The giant kilns are 250-foot long tubes, each  $9\frac{1}{2}$  feet in diameter. Each kiln is powered by a 100-hp motor and revolves at a top speed of 30 seconds per revolution. The kilns operate 24 hours per day,

shutting down only for repairs. They were made by F. L. Smidth Co., New York.

The Marblehead Thornton plant also has two smaller kilns which produce dolomite lime for the construction industry, glass manufacturing, oil purification and chemical uses.

Marblehead Lime Co. also has plants at South Chicago and Quincy, Ill., and Hannibal, Mo., which produce high-calcium lime for steel fluxing, oil purification, water treatment, leather tanning and chemical uses.

#### **Todd Buys Los Angeles Unit**

Todd Co., Rochester, N. Y., maker of check-writing machines, purchased Standard Bank Check Co., Los Angeles, for expansion of manufacturing facilities.

#### **U. S. Steel Improves Facilities**

Renovation of ingot mold production facilities at U. S. Steel Corp.'s Edgar Thomson Works, Braddock, Pa., is nearing completion. Extensive modernization of the gray iron foundry, begun in 1953, will be completed this fall.

With rebuilding completed, the foundry will contain 88,000 sq ft, an increase of about 20 per cent over area of the old foundry.

Production capacity will be more than 250,000 tons of molds annually. Entire output will be used by U. S. Steel plants. Molds produced will weigh between 7800 and 60,000 lb. E. A. Graham is foundry superintendent at Edgar Thomson.

#### **Furnacemaker Building Plant**

C. I. Hayes Inc., Providence, L. I., is building a plant at Cranston, R. I. Activities of the company, now dispersed among six buildings, will be integrated in the new building. The company makes industrial electric heat-treating furnaces.

#### Ford Plans \$1-Million Project

Ford Motor Co., Dearborn, Mich., will construct an industrial waste treatment plant, costing nearly \$1 million, to remove impurities from liquid waste from steelmaking operations at its Rouge plant. It will separate oil and solids from a flow of 80 million gallons a day.

#### **Steel Firm Changes Name**

Friedman Bros. Steel Co., Chicago, changed its name to Darco Steel & Wire Co. The firm will continue to operate Darco Metal Litho Co. as a division.

#### **Metal Testing Station Opens**

Dow Chemical Co.'s Texas Division, Houston, is operating what has been described as the Gulf Coast's first metal testing station. It is a joint venture of the chemical firm, American Society for Testing Materials, Philadelphia, and American Welding Society, New York. Its purpose is to learn more about the effects of natural forces on metals, finishes, new processes and alloys. Dow workers have installed several hundred samples of aluminum and magnesium alloys, with or without finishes. Similar testing stations have been set up on the Atlantic and Pacific coasts.

#### **Townsend Building Plant**

Townsend Co., New Brighton, Pa., is building a \$1-million plant in Ellwood City, Pa. This is only the first phase of the firm's expansion program. In the future, Townsend intends to build another section for a total expenditure of about \$4.5 million for a fully in-

May 3, 1954 83

CASE No. 260
\*Refrigerator Manufacturer

# ANNUAL SAVINGS OF \$28,000 on original

Logan Conveyor expenditure of \$18,000, and improved working conditions.

#### Savings include:

- (a) 20% Savings in Floor Space
- (b) Improved Working Conditions
- (c) Increased production
- (d) Less damage to product
- (e) Decreased Maintenance

\*Customer's name on request

The best way to MEET THE NEW COMPETITION is to reduce operating costs. As shown above, it can be done with Logan equipment. Write for literature showing how Logan Conveyors are cutting costs in countless plants, the nation over. Ask for K-E-Y book. Write today.

LOGAN CO., 535 CABEL ST., LOUISVILLE, KY.



tegrated factory to take the place of its present facilities near New Brighton. The first section of the plant will provide 81,000 sq ft of working space, while the whole program will provide 321,000 sq ft. The firm makes rivets, industrial fasteners and cold-headed parts.

#### Kaiser Buys Container Firm

Kaiser Steel Corp., Oakland, Calif., purchased about one-third of the common stock of Myers Drum Co., that city. The Myers plant has a daily production capacity of 4000 steel drums and 10,000 pails.

#### **Timken Boosts Tubing Capacity**

To meet increased demand of the oil industry for heavy-walled seamless tubing, Timken Roller Bearing Co. will erect a \$278,000 continuous annealing furnace at its Gambrinus, O., plant. Completion is expected in the latter part of September.

The 175-foot furnace will have a capacity of 3000 tons of annealed seamless tubing per month. It will be gas fired but capable of using fuel oil in an emergency.

Research indicates that heavy-walled seamless tubing can be used more efficiently and economically than the forged parts formerly used in tool joints and some other applications.

#### **Case Buys Detroit Firm**

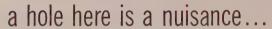
W. A. Case & Son Mfg. Co., Buffalo, manufacturer of plumbing, heating and industrial equipment, purchased Murray W. Sales & Co., Detroit.

#### **Electric Controller To Build**

Electric Controller & Mfg. Co., Cleveland, awarded contracts for integrated plant and office buildings to be erected on Lee road south of Miles, Cleveland. The facilities will include greatly increased engineering and laboratory area to be fully equipped with testing equipment, 258,000 sq ft of manufacturing space, and mechanized equipment for low-cost materials handling. The company makes motor controls and electric lifting and separating magnets. The plant









### a hole here is an advantage

Crucible Hollow Tool Steel Bars are saving time and money for more and more members of the metalworking industry. By using these hollow bars you eliminate drilling and boring operations, increase machine capacity and cut scrap losses.

Now, you can get hollow bars of any of Crucible's famous tool steel grades, in almost any combination of O.D. and I.D. sizes. And you can get *immediate* delivery of five popular grades from your local Crucible warehouse—KETOS® oil-hardening, SANDERSON® waterhardening, AIRDI 150® high carbon—high chromium, AIRKOOL® air-hardening, and NU DIE V® hot-work tool steels.

Your Crucible representative can point out ways to save time and money by using Crucible Hollow Tool Steel Bars.



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first name in special purpose steels

54 years of Fine steelmaking

HOLLOW TOOL STEEL

CRUCIBLE STEEL COMPANY OF AMERICA . TOOL STEEL SALES . SYRACUSE, N.

is scheduled to be completed by the spring of 1955.

#### **Hy-Pro Tool Boosts Capacity**

Hy-Pro Tool Co., New Bedford, Mass., will increase its plant's manufacturing floor space by about 50 per cent. Most of the space will house tap machinery and equipment now being manufactured especially for the firm.

#### **Conlon-Moore Buys Equipment**

Conlon-Moore Corp., Chicago, purchased the machinery, tools, dies and other equipment used by the former Conlon Bros. Mfg. Co., that city. The company makes clothes washers and ironers.

#### Will Build Wire Rope Plant

Wright's Canadian Ropes Ltd., Granville Island, Vancouver, B. C., will build a \$1-million wire rope factory, replacing the company's plant in that city.

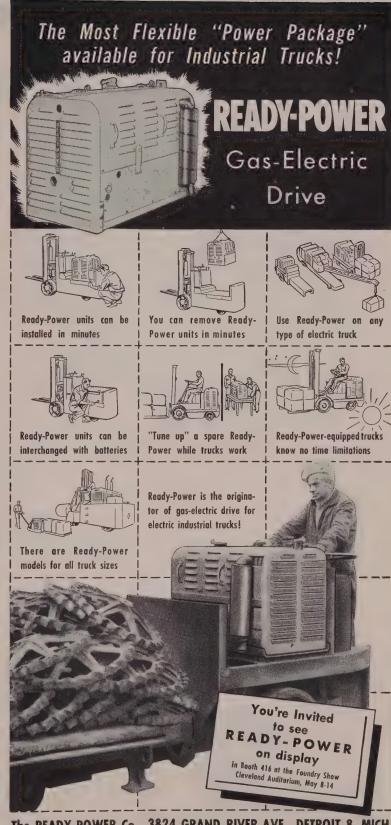
#### Plans Nuclear Power Plant

Duquesne Light Co., Pittsburgh, will participate with the Atomic Energy Commission, Washington, in the design, construction and operation of the first full-scale central station nuclear power plant. The site will be near Shippingport,



#### Waiting for Wings

Completed tail assemblies for Martin B-57 bombers are stored on wheeled racks at Baltimore plant for quick, easy movement to final assembly line



The READY-POWER Co., 3824 GRAND RIVER AVE., DETROIT 8, MICH.

Manufacturers of Gas and Diesel Engine-Driven Generators and Air Conditioning Units; Gas and Diesel-Electric Power Units for Industrial Trucks

# If Sulfuric Acid is one of your Major Process Requirements

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East... West... or wherever else sulfuric acid is required, General Chemical keeps pace with industry, creating new and better facilities to serve industry's ever-growing demands... to assure fast, efficient service!

Today, General provides twenty-one sources of supply in industrial centers across the country. Each is well geared to serve regional requirements, offering customers the advantages of "next door" location to General's modern plants. Virtually every one of these areas is strategically situated . . . ideal for new industrial developments, with large acid facilities already installed to provide their needs.

If you are considering a new plant location . . . and sulfuric acid is one of your major process needs . . . why not discuss your plans with a General Chemical representative? Perhaps he can provide vital information on acid availabilities that will help you in your decisions.



A Better America Through Chemical Progress · CHEMICAL PROGRESS WEEK · May 17 to 22, 1954



#### Studies Cable Vibration

Spans of ACSR are shown being tested for vibration at Alcoa's research laboratories, Massena, N. Y. Specimens must withstand 500 million cycles successfully before the cable they represent will be passed for service

Pa., on the south bank of the Ohio river. The nuclear reactor itself, a pressurized water reactor, will be constructed by Westinghouse Electric Corp., Pittsburgh.

#### **Galvanizers Honor Finkbone**

B. P. Finkbone, product engineer, research division, Armco Steel Corp., Middletown, O., received the 1954 award of the Galvanizers Committee of the American Zinc Institute at the institute's annual meeting in St. Louis. The award was in recognition of Mr. Finkbone's distinguished service to the Galvanizers Committee and to the galvanizing industry. Mr. Finkbone, who has been associated with Armco since 1910, was closely connected with development of the first continuous line for galvanizing sheets.



#### REPRESENTATIVES

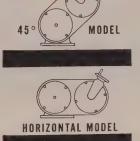
Snyder Tool & Engineering Co.'s Arthur Colton Co. Division, Detroit, is now handling its business in the Midwest territory from its office at 5807 W. Diversey, Chicago. Arthur R. Pearce, manager of the Chicago office, is in charge of the Midwest territory. W. J.

(Please turn to page 92)

# REEVES

Fractional HP Motodrive





### NEWEST DESIGN FOR VARIABLE SPEED 112 ASSEMBLIES

to choose from—
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#### CHECK ALL THESE NEW, REEVES FEATURES

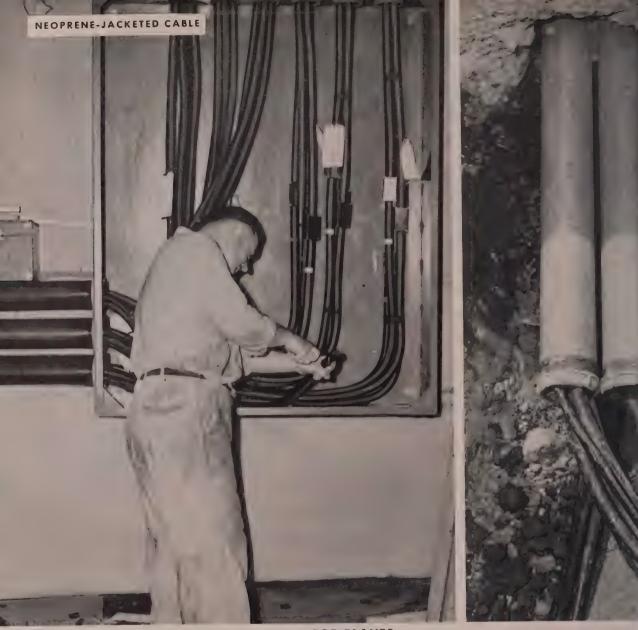
- New redesigned, more compact drive gives you speeds from 3 to 4660 RPM
  ... speed ranges from 10 to 1!
- 2 New "all-position," 14-turn handwheel gives operator sensitive, minutely-accurate speed control from a position most convenient for the installation!
- 3 New "all-position" output shaft permits driving in any direction—horizontal or vertical down!
- 4 New spiral groove lubrication with exclusive overflow outlet provides complete lubrication of all sliding surfaces for trouble-free operation at all times!

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... FOR PLANTS

# How to get premium wiring for little mo

The cable to use is DURASHEATH.

Its actual over-all cost is so little more than the cheapest cable

Wait! Before you buy cable on polatione, see how little a premium ing job actually costs. And what go insurance it is!

When you're wiring up, for poor lighting, the price of wire cable is but a fraction of the overcost. Simple arithmetic follows makes very little difference in total cost of the job whether you





... FOR UTILITIES

... FOR COMMERCIAL BUILDINGS

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cheapest cable or a premium cable neoprene-jacketed Durasheath\*. ut what a difference there can be performance!

haconda's Durasheath is tough heat-resistant...long-lasting. Its ged neoprene jacket resists moise, chemicals, sunlight, corrosion, etrolysis, abrasion and mechanical try. It delivers real service dependability year after year.

And Durasheath is good for almost any job you have. You can bury it directly in the ground . . . run it in damp ducts . . . string it overhead . . . in one continuous run with minimum splicing. Order through your Anaconda Sales Office or distributor. Anaconda Wire & Cable Company, 25 Broadway, New York 4, N. Y.

\*Reg. U. S. Pat. Off.

### ANACONDA

Primary and secondary distribution cable • building wire • portable cords and cables • mine cable • magnet wire • copper, aluminum, copperweld conductors • signal, control and communication wire • wire and cable accessories.

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- READ—How constructional, H-steels and leaner alloys are being used
- READ—How type affects fabrication of stainless steels
- READ—How the experts fit light metals into the new application picture
- READ—How you can take advantage of the properties of copper-base alloys
- READ—How titanium can play a practical role on the "commercial" level
- BONUS—An 8-page METAL SELECTOR covering these metals. Clip it. Keep it in a handy spot in your office or shop

COMING NEXT WEEK (May 10)

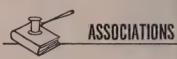
in LIEEL'S

MATERIALS SHOW ISSUE

(Concluded from page 89)
Fitzpatrick of Fitzpatrick Engineering Co., the former representative, is retiring from all business connections.



Laurel Machine & Foundry Co. Laurel, Miss., is celebrating this year the 50th anniversary of its founding. The company makes saw mill machinery and parts,



Officers of the American Zine Institute were re-elected at the or ganization's annual meeting in St Louis. President is Marshall L Havey, assistant to the president New Jersey Zinc Co., New York Vice presidents are: Warren H Leverett, National Zinc Co. Inc. New York; George W. Potter, Pot ter-Sims Mines Inc., Joplin, Mo. and Frank A. Wardlaw Jr., Inter national Smelting & Refining Co. Salt Lake City, Utah. Treasurer Erle V. Daveler, American Zin-Lead & Smelting Co., New Yorl Continuing as executive vice pres dent and secretary is Ernest 1 Gent. New York.



West Coast Fittings Co. open offices at 2001 Stoner Ave., L. Angeles, to manufacture tubulh brass goods. Ted Lederer president.

Investment Casting Co. mow to larger quarters at 60 Bro Ave., Springfield, N. J. The firmakes both ferrous and not ferrous precision castings.

Buehler Ltd. opened its replant at 2120 Greenwood at Herrey avenue, Evanston, Ill. company offers metallurgical selection ple preparation equipment, optimistruments for the laboratesting machines and other items.



Fool tips on multiple-tool setup, turning SAE 1050 ixles in as-forged condition. Best competitive steel: 3 to 7 axles per grind per set. VASCO SUPREME gives 15 axles per grind per set of tools on same job.



ing bits, on axle hole of SAE 1060 car wheels, as ged, hardness BHN 255. Competitive steels gave wheels per grind. VASCO SUPREME averages 40 eels per grind on this assignment.

for

# supreme performance

in high speed steels

specify and use

# ASCOSUPREME



end mills, on 30" diameter cams for carpet looms. ar high speed steels produced 6 cams on first -gave 1 to 2 regrinds. VASCO SUPREME ces 14 cams on first grind, permits 3 regrinds too small.



ue job for a unique steel. Glass pulling roll 16 feet Rockwell "C" hardness 66-68, required highlyed finished thread (28/inch) throughout length, iameter tolerance of .0005". VASCO SUPREME at thread 2605 feet long without regrinding, to nce of .0005"—one of the most remarkable perices ever recorded.

These instances of SUPREME cutting efficiency, taken at random from current report files, typify the unparalleled service to industry provided by this extraordinary High Speed Steel. VASCO SUPREME will do work no other high speed steel will do. It is often used with cemented carbide tools—and at far less cost. And there are applications where only VASCO SUPREME's unique combination of strength and toughness will do the job as it should be done. Write us about your present needs.

# VANADIUM-ALLOYS STEEL COMPANY

Manufacturers of First Quality Tool and Die Steels

Latrobe, Pennsylvania

COLONIAL STEEL DIVISION . ANCHO

# Why Gorham Tool Co. changed its basic thinking on Metal Turning

Many companies, whose men have attended J & L Production Seminars, are revising their production standards. The Gorham Tool Co., for example.

Gorham's top production men, when visiting Springfield, saw actual production line jobs running at unusually high speeds and feeds, and also saw the results.

Now, after introducing High Velocity Turning in their own plant, Gorham reports: "much better finish on all alloy steels including 52-100, and more production per labor hour. We are going into more horsepower throughout the plant."

It's a familiar pattern. Production men visit J & L Seminars, see for themselves the possibilities in new High Velocity Turning techniques, then use them to improve production and cut costs in their own plants.

"Our basic thinking relative to metal turning changed after attending a Itl Seminar. We awakened to possibilities we had never before suspected."

J. L. PRISK General Superintendent Gorban Tool Co.







Investigate what J & L's research findings can do for your production.

#### JONES & LAMSON MACHINE COMPANY



517 CLINTON ST., SPRINGFIELD, VERMONT, U. S. A. • TURRET LATHES • FAY LATHES THREAD & FORM GRINDERS • OPTICAL COMPARATORS • THREADING DIES



## **Technical**

## Outlook

May 3, 1954

MORE PAY LOAD—As soon as the airframe builders are satisfied that the problem of machining embrittlement has been licked, look for a tremendous upsurge in the use of titanium bolts and fasteners in commercial and military planes. Just on a straight substitution—titanium for steel—an average-sized plane will gain upwards of 1000 pounds of load capacity.

PORCELAINIZED ALUMINUM— Aluminum surfaces can't be porcelain coated in the conventional manner for an obvious reason—ceramic firing temperatures would melt the aluminum. But the flame spraying of powdered ceramic (STEEL, April 26, p. 106) on aluminum makes a beautiful fused coating without harming the base metal.

electropolished Forgings— "Don't sell electropolishing short," was the word passed out at the recent SAE National Aeronautic Meeting in New York. By removing ingrained oxide and cold work layers between forging operations, endurance limits of S816 and 12 chrome forged parts were boosted 20 to 25 per cent. Also reported: Compressor blades micropolished for 10 minutes at cost of one-half cent each; 1.5 to 2 mils removed from diameter, blade finish of 10 microinches.

AIRLESS SPRAY PAINTING— Paint or lacquer is atomized by (1) the mechanical force of a liquid released through a restrictive nozzle and (2) vapor pressure. To get latter, finish is heated close to the boiling point of a fractional part of the solvent; boiling is prevented by pressures of 300 to 600 psi. Vapor pressure is built up, and upon release into the air, solvents burst into a gas—rate of expansion is about

1500 to 1. Some of the advantages cited by the producer of the equipment, Bede Products Inc., Cleveland: Less overspray, less danger to the operator's health and the elimination of complex ventilating systems.

FLUORESCENCE IN METALLURGY— Role played by x-ray emission spectrography in metallurgy grows in significance. Dr. P. K. Koh, Allegheny Ludlum Steel Corp., makes this list of current applications: Thickness measurement; quantitative chemical determination of compositions of binary and complex alloys; quantitative chemical determination of minor elements in alloys; determination of impurities of heavy metals in light metals; chemical analysis of rare earth elements; detecting impurities in TIC powders; alloy oxidation study; substitutional phases and micro-radiography.

**PENETRATION CHECK**—Sherman Electric Co. Inc. reports development of a unit that provides manual or automatic checking of penetration of molten material into thermocouple protection tubes. It should work a considerable advantage in applications in salt-bath furnaces, galvanizing tanks and smelting furnaces.

DIECAST ASSEMBLY—Scissors, about one inch long, are being die-cast in one operation at Gries Reproducer Corp., New Rochelle, N. Y. They work and will cut paper. They're for display, but the principles are also used to produce jewelry clamps (sister hooks) chain and other small moving assemblies—with no assembly operation required. Technique, called Intercast, involves a series of overlapping molten zinc injections, allowing one section to solidify before the next is injected on top of it.



## How to Machine Titanium

The wonder metal probably works a lot easier than you thought it would. Big problem now is short tool life. Chief culprits are abrasiveness, galling, high tool tip temperatures

LATEST research indicates machining people will find that titanium and its alloys are like new neighbors. As they get to know them, they'll like them much better. Of course, there are pluses and minuses to consider.

There are at least three reasons why the new material ought to cut more easily than steel: Its coefficient of friction (generally), shear strength and unit power requirements are lower—latter is lower even if slower speeds used with titanium are counted.

It is apparent that there should be little difficulty getting good surface finishes. For example, titanium alloys work harden about 50 Knoop (500-gram load); annealed AISI 8640 steel checks out at least 150; and high-temperature, jet-engine alloys come to at least 200.

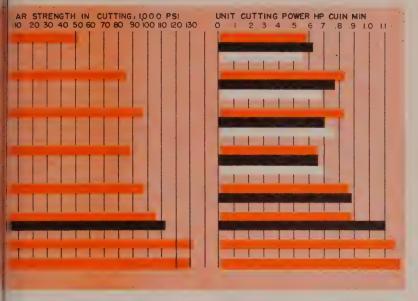
With titanium, depth of work hardening is less than 0.005 inch; while this figure may approach 0.020 inch for the other materials.

Deficits—On the other side of the ledger, we have poor tool life. High among contributing factors here are abrasiveness, galling and high tool-tip temperatures.

Basic to the understanding of the titanium machining problem is the fact that short contact between chip and tool face is characteristic of the metal. Heat is concentrated (to a greater exten than other metals) at the cuttin; edge—material also has low ther mal conductivity. This is linker with high cutting temperatures.

Short contact also puts mos of the cutting force on or near the edge of the tool. When too face craters, it is near the edge Total breakdown is likely to happen quickly.

Abrasiveness, Galling—Impurties to which titanium is so suceptible combine with parent medal to form extremely hard, abrasive microconstituents that make hard to measure. In galling, tanium rubs off on tools or wellitself to them. This is especial



roublesome in milling, drilling and sawing.

Titanium cuts easily while tools fre sharp. Rate of wear probably vill not be linear; and, at first, tools wear slowly. After an appreciable wearland develops, wear may progress rapidly to complete breakdown. It is particularly important to keep a close watch on tools and remove them before works spoiled.

Heat—Chief cause of dull tools s abrasive wear. Resistance to it is closely related to hardness. Femperature is the key to both. Hardness of high-speed steel tools falls rapidly at about 1000° F—practical limit of operation is generally said to be 1100° F. Caroide tools are usually serviceable at 1300 to 1400° F.

To stay within temperature limits with titanium alloys, cutting speeds are restricted. With high-speed, steel tools, speeds are about what can be expected for the hardness of the material being cut. For example, temperature of 800° F is produced at 40 fpm when Ti-150A (about 300 Bhn) and AISI 4340 steel (quenched and tempered at 300 Bhn) are cut.

Carbide tools give different results. Titanium at 300 Bhn must be machined at a speed less than 70 fpm. In contrast, the same tool will cut steel of the same hardness at about 300 fpm. At 250 fpm, cutting temperature of titan-

ium will rise to almost 2000° F.

Temperature-feed relationship with high-speed, steel tools is not a serious factor—heaviest possible feed should never cause too much heat. Using carbide tools, temperatures rise with increasing feeds, but maximum temperatures can be held down by combining heavy feed with slow speed.

Speeds and Feeds—Commercially-pure titanium can be turned at 150 to 170 fpm with high-speed steel tools; 170 to 200 fpm with cast-alloy tools; and 300 to 320 fpm with carbide tools. High-strength alloys (275 to 350 Bhn) can be turned at 30 to 60 fpm with high-speed tools, 50 to 80 with cast alloys and 120 to 160 with carbides. High carbon materials may require much slower speeds.

For high-speed tools, feeds

should be 0.004 to 0.007 ipr; 0.005 to 0.010 with cast alloys; and 0.008 to 0.015 with carbides.

Materials, Angles — Of highspeed steels, cobalt types are preferred. Cast alloy tools are satisfactory. Carbides ranging from C-1 through C-4 should be used.

Rake angles from 6 degrees positive to 7 degrees negative are satisfactory with carbides. With cast alloys and high-speed tools, use a 5 per cent positive angle.

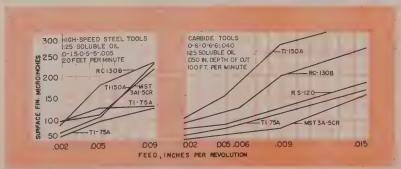
Cutting Fluids—Cooling capacity is more important than lubricating qualities. Water-base soluble oils and chemical types generally do the job.

Setup—Rigidity is important. Tool deflection causes increased smearing on the flank. To avoid seizure of the workpiece, live centers should be used.

Life vs. Speed—Carbon content is critical. Alloys with over 0.2 per cent are virtually unmachinable with high-speed tools. Oxygen and other atmospheric gases may cause difficulties. Nature of the alloy and distribution of microconstituents also are important.

Life vs. Feed—While tool life appears to shorten as feed is increased when time only is considered, the cubic inches of material removed stays practically constant over the 0.002 to 0.016 ipr feed range.

With carbide tools, number of pieces machined is independent of feed. Net result is that a great gain is made in rate of production at no sacrifice in number of pieces per tool grind. With high-speed tools, optimum feed is about 0.10 ipr, with a rather rapid loss of tool life at higher feeds. Limit-



Under normal machining conditions, satisfactory finishes can be obtained. Curves relate surface finish and feed for high speed steel and the carbide tools

ing factor with feed is rigidity of the setup.

#### MILLING TITANIUM

The Rub—Prevention of cutter chipping and breakage is the chief problem here. Short, individual chips characteristic of milling do not fall off but remain welded to each tooth as it emerges from the cut. On the next revolution, chip has to be struck off. But the bond may be so strong that tooth is chipped on impact.

Best solution is to place work so cutter teeth finish cuts in a direction parallel to feed. Maximum bite is taken at start of cut, so the welded-on section is only a sliver. In slab milling, this means a climb cut. Face milling calls for lining up the edge of the wedge with the emerging side of the cutter periphery—also a climb cut.

Factors—Carbide or cast-alloy tools may be used. Of the tool angles, relief is probably the most critical. Less than 10 per cent leads to excessive smearing along the flank; much over 15 degrees weakens the tool and encourages chipping at the edge. Rakes are not critical. Zero axial and radial rakes are satisfactory with Stellite. Zero axial and as much as 10 per cent negative rake are about right for carbides.

A 30 to 60-degree corner angle or a large nose radius is advantageous. They give a thinner chip for a given feed to minimize chipping. Less unit pressure also helps dissipate heat.

Heavy feeds appear to give greater production per tool grind

but tool breakage goes up. Feed of 0.003 to 0.008 ipt is the compromise. Cutting speed on titanium alloys with carbide cutters can go up to 100 fpm—and higher with lighter feeds. About 50 fpm is reasonable with cast-alloy tools.

#### ROUTING TITANIUM

Don't — Stacked sheets of Ti-100A or RC-130A up to a total thickness of about ¼ inch can be routed with some success. Don't try to rout titanium as you do aluminum; it's harder and stronger

Slender, fragile routing cutters deflect so much that customary thick stacks of sheets can't be handled. Tool failure, as in milling, is hastened by the manner in which chips stick to the tool. With a 3/8-inch diameter, two-flute rout, you can cut stacked sheet up to about 1/4 inch thick at 150 to 250 fpm (1500 to 2500 rpm) and about 5 to 10 ipm table feed.

Tips — Relief angles should be generous. A compressed air-vapor mist also may be helpful. It also is essential to keep maximum rigidity of the spindle, cutter and work. Cutter overhang should be short as possible to minimize deflection.

#### DRILLING TITANIUM

Recommendations—Major problems here are chip flow, clogging and point smearing. Breakage can be minimized by using the shortest possible drill. Also use a jig. Design holes as shallow as possible.

A lubricating and chemicallyactive fluid is important on small drills. Coolant is more important with  $\frac{1}{4}$  inch and larger drills. Blunt points (140 degrees) are superior on small sizes. On large sizes, use a 90-degree or double angle.

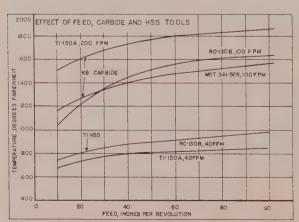
Feed and Speed—Use 30 to 50 fpm for alloy titanium of 300 to 350 Bhn that has low carbon content. Feeds of 0.003 to 0.007 ipr are satisfactory—increasing with increasing diameter. For ¼-inch drills, rpm should be between 450 and 750.

Hacksawing—All the commercial titanium alloys (except those containing high carbon) can be hacksawed with reasonable speed and efficiency. Cutting rates are 25 to 50 per cent slower than quenched and tempered alloy steels of equivalent hardness. Blade life, in terms of productivity, is at least 50 per cent lower.

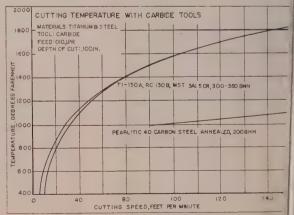
Tips — Sawing machine should be heavy duty, adequately powered, structurally rigid and free of vibrations. It should carry a positive feeding mechanism; and it should be equipped with a coolant system.

Work should be held securely and blade tension should be high. Use a torque wrench to tighten all blades uniformly. Ease blade into cut by holding back feed until well started. Blades should be fairly coarse-pitched, with 4 to 6 teeth an inch. They must be high-speed steel. Use sulphurized-chlorinated oils for general purpose work.

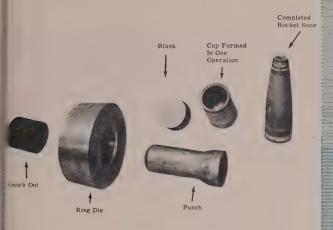
Adapted from a report prepared by Curtiss Wright Corp, for the U. S. Air Force. It was written by James Voast. Metcut Researc Associates did test work.

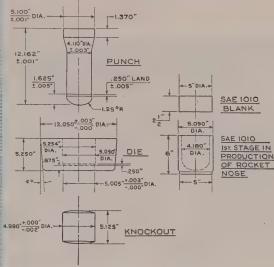


Temperature-feed relationship with high speed tools is not a serious factor. When using carbides, temperatures can be held down with heavy feed, slow speed



High tool tip temperature is a critical item in to machining of titanium. Short contact between ch and tool face is characteristic. Tool life is sho





### Tooling Solves a Problem

In cold extruding rocket projectile noses, success hinges on performance of tools for first operation. Here is the way one company tools up for that job

PUNCH AND DIE design is a critical factor in the success of cold extrusion of steel. Severity of the operation puts heavy demands on tool material and on its application.

In cold extruding rocket projectile noses from SAE 1010 steel, one manufacturer found the big problem in the first stage of extruding the steel slug. Once that was solved, the company's engineers figured the remaining stages of manufacture would fall into a routine pattern.

Punch — Finding tool or die steels that could withstand the strain of the impact was a stubborn problem in getting the job underway. Seventeen hundred tons of pressure are exerted on a 2500-ton press in the first operation.

Many steels, including high speed steels, were tried for the punch. Highest production from any of them was about 3000 pieces. The difficulty lay in premature upsetting and cracking of the tool steel.

Success — Final choice for the job was an 18-4-1 high speed steel, Carpenter Star-Zenith. At the last report, the punch had pro-

duced more than 14,000 pieces and was still in operation.

Heat Treat—Punch is hardened in a salt bath from a temperature of 2350° F, and then double drawn at 1050° F to a hardness of 62 to 64 Rockwell C. After drawing, punch is given a liquid nitride treatment for five hours at 1000° F. This develops a surface hardness of approximately 72 to 74 Rockwell C to a depth of about 0.001-inch.

Temperature developed in the punch during the extruding operation is about 500°F and this temperature is maintained constantly. When the press is idle between shifts, the temperature is held with a special heating jacket. Knockout is also made of high speed steel and treated to the same hardness as the punch.

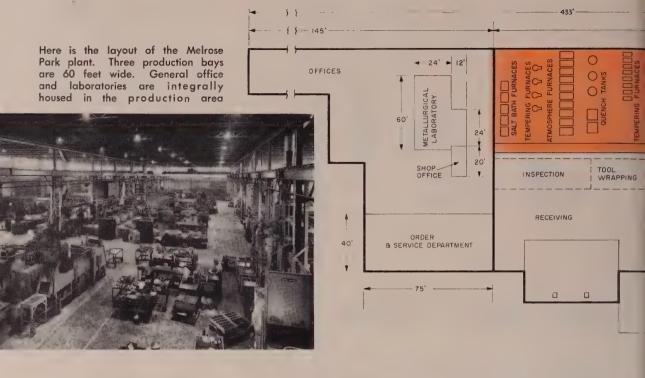
Ring Die—Carpenter Vega, a manganese - chromium - molybdenum, non-deforming, air-hardening die steel was chosen for the ring die steel. When last reported, the ring had turned out 23,000 cups and was still in operation.

This ring is given standard heat treatment and put into operation at a hardness of 58 to 60 Rockwell C. There is no need for high temperature furnaces or packing. Scale flakes off the tools cleanly in air cooling. Another advantage is the uniform hardness from surface to center.

Part Physicals—Previous failure of the ring occurred when the strain exceeded the elastic limit of the steel. Even though the ring die is press fitted into a 4-foot diameter hardened retainer ring (34 to 36 Rockwell C) the force exerted in the extruding operation stretches the die so the inside diameter becomes too large for the close-tolerance requirements of the cup. This must be held to 0.010-inch of specified wall thickness.

Here's an indication of the degree of cold work done in this operation. During the cold forming of the 14-pound, 6-ounce slug, the hardness of the steel increases from about 60 to nearly 90 Rockwell B.

The resulting increase in mechanical properties in this and all subsequent operations meets specifications and eliminates need for final heat treatment of the finished nose.



# A Look AT Custom Heat Treating

Specialized industry has grown by leaps and bounds the past 20 years. Services range from trouble-shooting to providing heat treating facilities for the small plant

A MANUFACTURER of railroad spikes used a low-carbon, molybdenum, high-speed steel (conventionally hardened and tempered) for dies.

But performance was spotty. Some dies made several hundred kegs of spikes. Others failed after 50 to 75 kegs. What would you have done?

Chances are you and the spike people agree. They called in a commercial heat treater.

Metalworkers with a specific problem, small shops that can't afford the cost of a heat treating department and larger companies that find it pays to farm out many of their heat treating jobs, called on commercial heat treaters to the tune of over \$31 million last year—this MTI figure represents about

65 per cent of the commercial heat treating industry. Significance of this trend is pointed up by the fact that job shop heat treating sales were only \$970,000 in 1934.

Typical—Inland Steel Co.'s railway accessory department, E. Chicago, Ind., the customer above, called on Lindberg Steel Treating Co., a commercial heat treater.

Inconsistent die life was first traced to the way they were made from bar steel. Grain flow was parallel to the direction of the main applied stress, which was directed against the metallurgical center of the bar. Die life was improved by using a wider bar and machining dies transversely, but further work was necessary.

Heat checking was found to be

the chief cause of complete breakage. Once it started, the network of cracks acted as notches to promote rapid, fatigue-type failures.

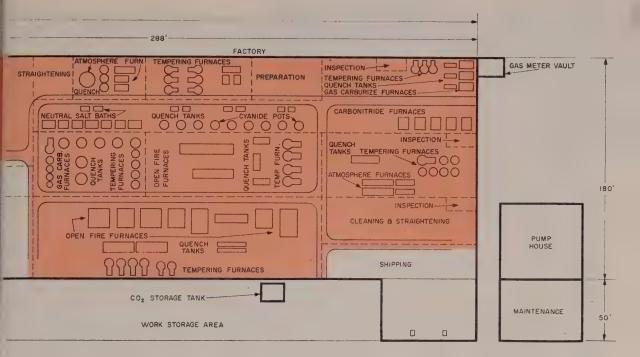
Solution—Dies were carburized to produce a tough core and hard case—latter provided compressive stresses on the surface that would minimize propagation of heat checks after they formed.

Treatment included: Pack carburization in charcoal at 1850° F to produce a case depth of 0.032 to 0.045 inch; quench in oil and triple temper to produce a hardness of 58 to 60 Rockwell C on the case; followed by blasting with sand or steel grit.

C. E. Chapman, superintendent at Inland, says die life has been increased 50 per cent.

Meeting the Trend—Demand for heat treat services prompted Lindberg, with headquarters in Chicago, to build branch plants at Rochester, N. Y., St. Louis and Los Angeles. This experience, dating back to 1946, underlined the need for an expanded in-line production facility for the Chicago and Midwest industrial community—a need now being filled by the Melrose Park, Ill., plant.

Melrose Park Offers—Quality control is the watchword here. Even though the commercial heat treater has little say-so over raw



materials shipped to him for processing, the plant has less than 0.5 per cent rejects.

Control begins when the order is written. Under supervision of an experienced metallurgist who heads the order department, orders are screened for quality, type of steel, cleaning and distortion tolerances and mechanical properties wanted. Before material is released for processing, factors, such as case depth in relation to cross-section, hardenability, poor design and insufficient bar removal, are carefully surveyed.

This prior - to - heat - treatment check is followed by the operator's inspection. He looks for seams, deep stamp marks, and verifies steel analysis by spark testing. If he thinks work is not in proper condition, the customer is advised.

Uniformity—To make for operational uniformity, each department has standard practices for equipment and material treated. The inspection department is decentralized in key areas to provide in-process and patrol inspection to back up standards. Final inspection conforms to Military Standard 105A.

Instrument and thermocouple calibration and laboratory control of atmosphere generators and salt baths are provided at all times.

Inspection department supervisors report to the plant metallurgist. So the lab is always aware of shop operations and is able to help supervisors make decisions.

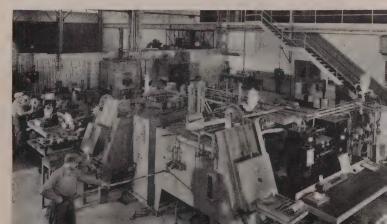
Metallurgical Lab — This unit plays a vital role. Duties of the 12-man staff include process control, engineering of heat treatments, consulting with present and prospective customers, product and fabrication development, investigation of shop and field failures, research, and development and educational activities within and without the plant.

Process control involves regulation of atmospheres to suit requirements, analysis of salt baths, measurement of control test specimens for case depth and carbon concentration and regulation of cleaning processes.

Staff is called upon to make specific recommendations for methods and processes used in the shop to meet engineering specifications. Methods of heat treatment may be established from blueprints and production figures submitted by the customer to develop accurate cost figures. To correlate fabrication and heat treating methods, the lab also cooperates with the engineering and metallurgical staffs of customers at their plants.

In the interest of highest quality at lowest cost, the staff works closely with the customers and steel suppliers. Daily questions in-

Furnace in foreground is an L-type atmosphere hardening unit. Endothermic generator is on the right





This section of lab includes cutting and grinding room, specimen polishing room and microscope bench

clude: "What steel shall I use? How much shall I allow for finishing? What hardness is most desirable?" Recommendations are followed up to establish performance and develop case histories.

Field Work—This is another major area of concentration. Anyone heat treating a large number of different parts and materials will run into occasional trouble. Parts crack, warp, fail to harden, blister, pit, etc. Trouble comes during or after processing and requires rapid investigation.

The lab co-operates with manufacturers by investigating field failures to determine whether they can be attributed to metallurgical causes. Where they are eliminated from the picture, other pre and post heat treatment operations are examined.

Production and customer requirements dictate the activities of the research laboratory. As requirements become more stringent, new techniques, processes and equipment may be necessary. The research lab translates new requirements into shop routine.

Layout—Plant production is located in three bays that are 60 feet wide by 288 feet long. All are serviced by multiple cranes

that operate at 51 fpm. General offices and metallurgical laboratory facilities are an integral part of the production area. A separate warehouse is used exclusively for the storage of raw materials, heat-resisting alloy fixtures, pots, etc.

Quenching Media—Oils, water and brine are stored in tanks housed outside the main building. They are pumped overhead into the numerous quench tanks within the plant. Media are returned to storage tanks by gravity. They are pumped through evaporator-type coolers in this "pump house."

Compressed air is used to actuate furnace doors, elevators, fixtures, etc. Quench oils are filtered by a gravity-type filter in which oil is passed through a filter paper on a continuous basis.

Six steel and one concrete storage tank, along with 37 quench tanks, have facilities for changing media from straight mineral oil to a fast quench oil, from water to brine, etc. Six quench tanks contain Niter-nitrate salts for austempering and martempering.

Fire protection is provided by an automatically-cycled, fixed installation storage tank of CO<sub>2</sub> that has a 2-ton capacity. All oil

quench tanks are provided with  $CO_2$  fire extinguishing nozzles of the linear or fog-spray types. There are also several fog spray nozzles on hose reels.

Power—Gas meter vault is on the northwest corner of the plant The natural gas supply is split into two systems here. One is used for plant heating, the other for firing heat treating equipment Lindberg is one of the largest industrial consumers of gas in the Chicago area.

Power to energize electrically heated furnaces is brought into the plant at 41,600 volts and is reduced to 460 volts by three load centers rated at 1250 kva each Where needed, other transformers step down voltage to 220.

Blowers—Combustion air is provided by blowers housed in a separate blower room on the roof of the main building. Blowers for exhaust systems are within the plant as well.

Atmospheres — Many types of controlled atmospheres are used. Capacity is 100,000 pounds of steel a day. Endothermic generators produce on the order of 10,000 cfh to service furnaces for neutral hardening, carrier gas for carbonitriding, carburizing and carbon restoration.

Exothermic generators supply prepared atmosphere for bright annealing of low carbon steels. A steam generator makes a steam atmosphere for tempering steels and annealing nonferrous metals Iron powder compacts are also processed in this atmosphere.

Ammonia dissociators at plant No. 1 produce atmosphere for bright hardening and tempering stainless steels and the annealing of magnetic metals and stainless steels. Dissociated ammonia is also used in nitriding steels by the Floe process. Raw ammonia is used for nitriding and carboni triding and nitrogen for purging retort furnaces to eliminate explosion hazards.

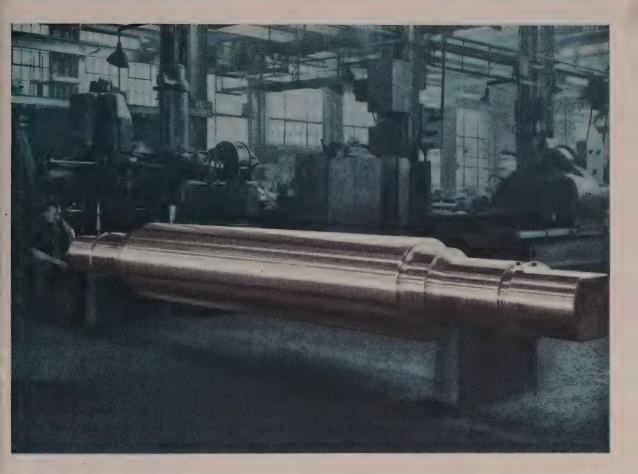
Others—Salts are available for such operations as cyaniding, liquid carburizing, neutral harden ing, tempering, martempering and austempering.

Open-fire, batch, roller-rail furnaces have a capacity of over 300, 000 pounds a day for carburizing normalizing and hardening.

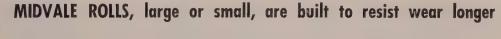
102

Pump house includes quench media storage tanks, pumps, evaporator-type oil coolers and filtration equipment





#### FOR ROLLING HIGH...WIDE...AND HANDSOME



These rolls will be used in the new Mill Stand of Aluminum Company of America at Davenport, Iowa, and illustrate Midvale's ability to produce forged alloy rolls of the highest quality. This is one of the largest rolls of this type ever produced.

The other extreme is the small roll shown—4½" diameter by 16" body length for cold rolling copper and hardened to 100 scleroscope. Both are built for long life and maximum service.

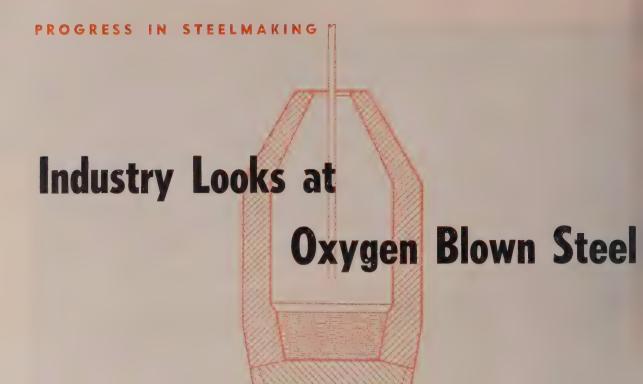
What are your large or small roll problems? Let Midvale help you. Our 80 years of experience, highly skilled craftsmen, plus complete facilities for producing and shaping our steel are at your service. Our recommendations about material, hardness and design are yours to help increase your tonnage rolled of steel, aluminum, copper and other metals. Why not consult us about your roll problems?

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Austrian process has a lot of advantages for producers on this side of the Atlantic. Gas cleaning is going to be an expensive proposition, but probably not prohibitive

AUSTRIAN steel practice employing the oxygen blown converter is not trying to replace the open hearth. It will, however, take away from the open hearth that portion of production which has to do with the refining of metals as this new process can now do this work much faster and better at half the cost.

This advantage of the oxygen converter process, now being employed in steel plants at Linz and Donawitz, Austria, was brought out in the paper entitled "American Adaptations of the Austrian Oxygen Process", co-authored by W. C. Rueckel, division manager, and W. A. Vogt, consulting engineer, Steel Division, Kaiser Engineers, Oakland, California, at the 37th conference of the Blast Furnace, Coke Oven and Raw Materials Committee and National Open Hearth Committee of AIME. Palmer House, Chicago.

Mr. Rueckel stated that the new

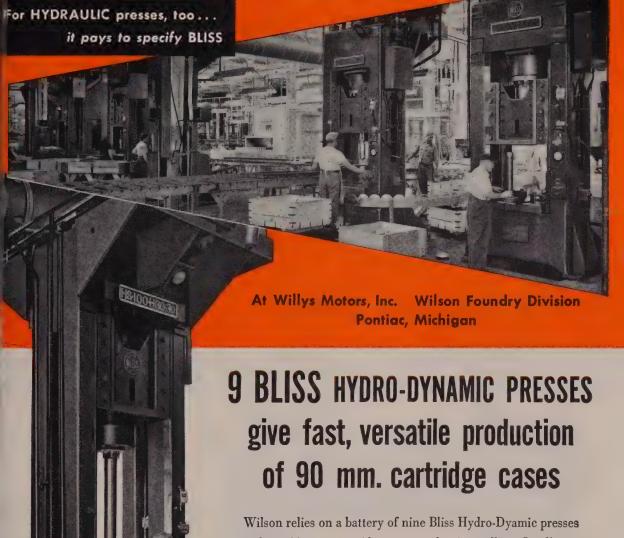
process can refine metals with much lower chemical heat content than usual, as a consequence of the blowing with pure oxygen, resulting in the elimination of nitrogen. The converter can melt 20 to 30 per cent scrap depending on the hot metal analysis. Austrian steel plants report the efficiency of oxygen in the converter as 95 per cent. The yield of conversion from pig iron to steel is 88.5 per cent, based on actual practice. The weight of the resulting slag is about 210 pounds per ton of steel.

Pours 35-Ton Heats—At the completion of a 20-minute blow, the oxygen lance is withdrawn and the converter turned down, pouring 35 tons of steel into the ladle and giving 7.7 tons of byproducts. Of this by-product tonnage, 4.1 tons will be slag, and into the gas collector system will have gone 0.5 ton of oxides as flue dust, and 3.0 tons of gas, both reclaimable. Heat input per net ton of

hot metal is calculated at 2,315,000 Btu. The following factors make the oxygen process so advantageous:

High reaction rate of pure oxygen, high efficiency of pure oxygen in the converter (95 per cent) compared with the efficiency of oxygen used in open hearths (75 per cent), no oxygen bearing ore necessary resulting in heat saving and small volume of slag, no heating of 80 per cent of nitrogen in the blast, no water cooling, and recovery of CO gas fuel.

High Ductility—Claim is made that the oxygen converter steel, being noticeably free of gases, is suitable in all cases where high ductility is required. It is possible to pour 15-ton ingots of steel which has been refined to 0.02 per cent carbon and 0.2 per cent manganese without subsequent deoxidation. Unalloyed carbon steels up to about 25 per cent when compared to normal open-hearth steels show



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a superiority in cold deformability and in weldability.

One of the reasons for the remarkably high degree of purity which is characteristic of the oxygen converter process lies in the high fluidity of the molten steel which facilitates rising of nonmetallic impurities to the surface of the bath. Since under such conditions it is not necessary to deoxidize, the pickup of impurities in the form of the oxidation products in the ladle is avoided.

No Difference Observed-Strain

hardening curves show that the degree of strain hardening is practically the same for both openhearth and oxygen converter steel. The latter shows no traces of pickling blisters. The tensile strength of oxygen converter steel, as rolled in the normalized condition is on the average somewhat lower than values obtained from open hearths of comparable carbon and manganese contents. Pressure welding appears to be an application for which oxygen refined steel is particularly well suited; in this field,



#### The Big Stretch

This 400-ton capacity Sheridan wrap

forming machine was recently installed at Convair's San Diego plant. It is equipped to handle sheets of aluminum and other aircraft metals up to 6 feet wide and 30 feet long. A time and labor saving device, it is designed with setup panel where degree settings are centrally controlled

it is definitely superior to open hearth material.

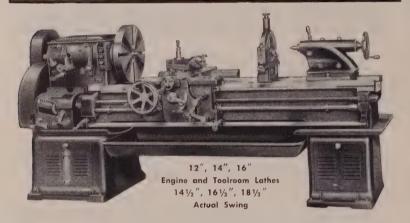
Rimming oxygen converted steel can be utilized for all applications specifying fusion welded joints to the same extent as open-hearth steel of identical composition, as there is no difference between open-hearth material and killed steel from the oxygen process Killed low-carbon steel plates give excellent results in fusion welding which shows 180-degree bend without cracking. The theoretical yield of oxygen converter steel excluding cooling scrap and pi scrap is 91.2 per cent which i almost identical to that of an opehearth furnace.

Gas Cleaning Problem—America installations will have to find a se lution for the gas cleaning before new plants go into operation. Com sidering the nature of the dust the gas evolving from the throa of the vessel, approximately pounds of dust of 90 per cent minus 1 micron particles are di charged per ton of pig iron, whim means that nearly 13 cubic fe of dust would be discharged du ing a single 35-ton blow.

Gas volume evolving from t throat of the converter dependent on the volume of oxygen used a is comparatively small, appro-

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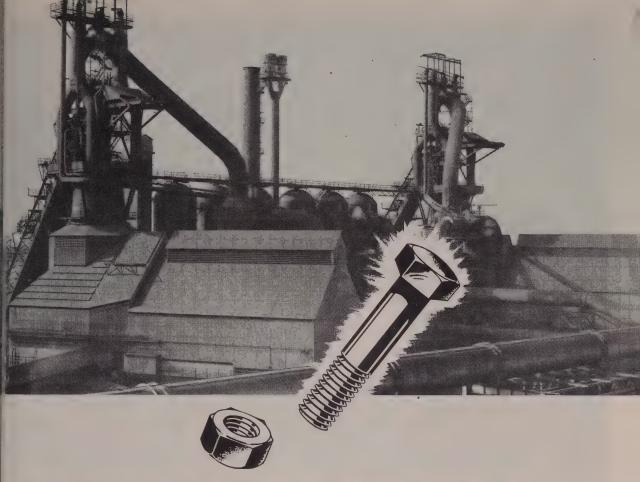
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#### Hole-Punching Tool

Use of cartridge-actuated punch equipment, developed by Mine Safety Appliances Co., Pittsburgh, has speeded the laying of rail at the Navy's ammunition depot at Camden, Ark. With separate firing hammer, the operator discharges the cartridge and the gas pressure generated activates the piston which forces punch through rail web to leave a precisely-sized hole

mately 10,000 cubic feet per minute at 60°F for a 35-ton vessel. The gas consists of approximately 90 per cent CO and is discharged at a temperature of approximately 3000°F.

Cost Is High - Gas cleaning installations might amount to close to a million dollars for a good sized installation if the gas is treated in a closed system such as is employed for treating blast furnace gas. If the gas volume is diluted, the cost of the installation would go up according to degree of the dilution. The problem of the gas cleaning system is complex and that is the reason why there has been no solution up until now, according to the speaker. However, it is also attractive insofar as, by its solution, a valuable fuel gas is saved for useful application throughout the plant. In addition, iron oxide dust is recovered in a fineness which is a most desirable and highly priced material for which there is considerable demand in the paint industry.

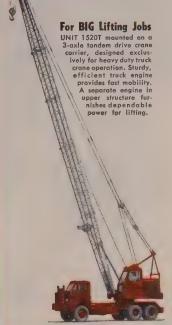
Bessemer Speed—In his paper on "Recent Developments in European Steelmaking Practice", H. B. Emer-

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New BUSH-LOCK Cable Conveyor is available in  $44^{\circ}$  and  $46^{\circ}$  sizes for transporting parts through cleaning, drying, painting and progressive assembly operations or as overhead storage banks. Because short radius horizontal and vertical curves, more compact layout is possible, conserving valuable space.

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ick, assistant director, technical services, Jones & Laughlin Steel Corp., Pittsburgh, mentioned that in the oxygen converter process molten blast furnace iron is refined to steel in a basic-lined solid bottom vessel by directing the jet of 98 per cent pure oxygen vertically, at high velocity onto the surface of the hot metal bath. The resulting product is comparable in quality with basic open-hearth steel, yet the production rate is on a level with the conventional bessemer converter process. The capital investment and unit conversion cost are much lower than for an open-hearth shop of equal capacity.

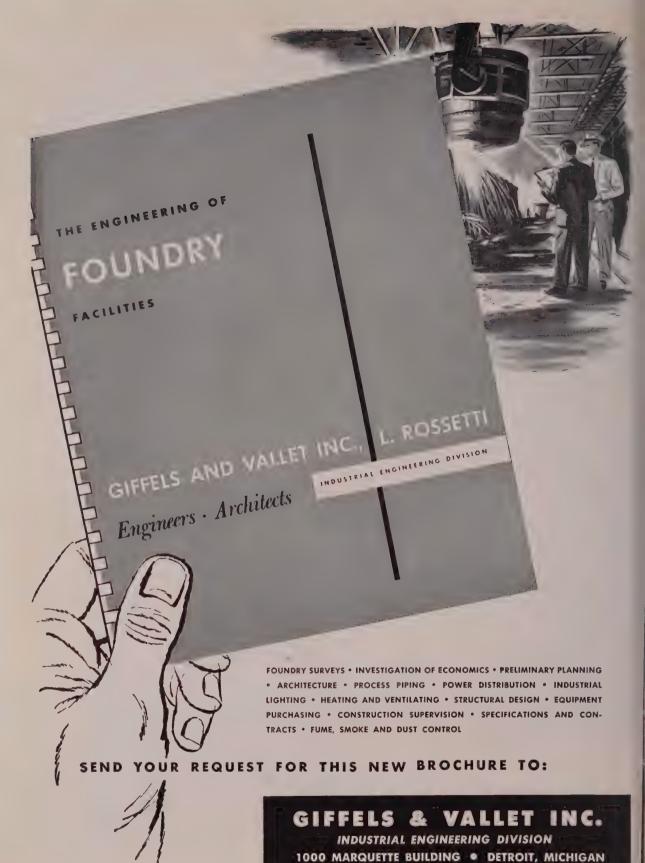
The process, Mr. Emerick pointed out, will accommodate iron of a type which is normally unsuitable either for the open-hearth or the conventional converter processes. Hot metal mixers are employed to insure satisfactory uniformity of iron compositions for best temperature control.

Building Two Plants - Discussion of the foregoing two papers brought the announcement that the pilot oxygen converter plant in operation at Dominion Foundries & Steel, Ltd., Hamilton, Ont., is producing 100 tons of steel per day using ordinary basic iron and 22 per cent scrap as charge metal. Metal blown to the end point has the following analysis: Carbon plus or minus 1.3, manganese depends upon the manganese content of the hot metal, phosphorus controlled under 1.5, and sulphur averaging 0.018 per cent. About 2100 cubic feet of oxygen is used per ton of ingots.

A 160-ton high purity oxygen plant has been purchased by the McLouth Steel Corp., Detroit, to serve three 40-ton closed bottom converters which, in conjunction with a 28-foot hearth blast furnace, are planned for future installation. Metal is to be oxygen blown to 40 per cent of the encepoint, and then charged into the two 200-ton electric furnaces. The electrics will be ready for operation in May.

Grade Iron Used — The recently completed oxygen steelmaking plants at Linz and Donawitz Austria, operate on blast furnace metal which covers a range from





.2 to 1.5 per cent silicon, from 1.5 o 3.0 per cent manganese, and up o 0.25 per cent phosphorus. It as been discovered that dephoshorization can be made to take lace much earlier by the addition f iron ore. Depending on the level f heat-producing elements in the ron, the normal range of scrap dditions in the two Austrian prouction shops is 12 to 25 per cent f the gross metallic charge.

The total lining thickness is bout 20 to 24 inches. The bottom 5 about 26 inches thick over-all. Normally, it remains in good conlition indefinitely, while the body ining fails by even wear of the idewalls in the reaction zone. The inings must be patched or replaced after blowing approximately 250 leats, or roughly after one week of perations.

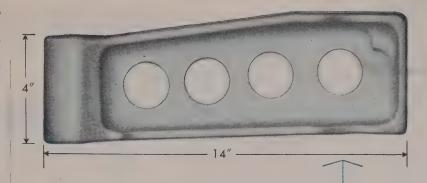
After charging the vessel with crap and hot metal, the oxygen et is lowered to a position several nches above the surface of the oath. Slag-forming fluxes, chiefly ourned lime, are added during the olow. A brick-lined smoke hood connected to a stack discharges dense cloud of reddish brown 'umes. All heats are blown down to 0.05 or 0.06 per cent carbon and ecarburized in the ladle if necessary. The endpoint normally ocurs after 18 to 20 minutes and s signalled by the collapse of the carbon flame.

Yield Is Attractive—Gross yield, from metal charged to liquid steel, is approximately 90 per cent. Eighty per cent of the heats finish below 0.030 per cent sulphur and 0.025 per cent phosphorus. The material exhibits good cold forming properties and good weldability.

In a wide variety of applications, including wire products, tin plate, hot and cold rolled sheets, plates and bar products the material has held its own against basic open-hearth steel of similar carbon content.

#### **NBS Offers Strain Gage Data**

National Bureau of Standards is offering proceedings of its symposium, "Characteristics and Applications of Resistance Strain Gages." It's a 140-page volume of papers and sells for \$1.50.



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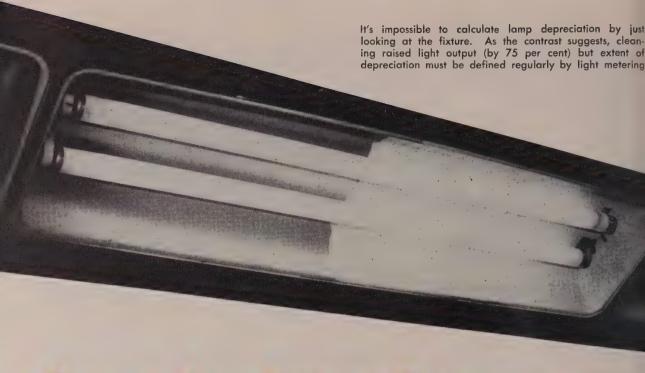
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May 3, 1954



## **Program Your Lighting Maintenance**

Lighting up-keep problems yield readily to a well-planned and executed system. Here are the basic procedures that must be followed, with tips on methods and equipment

By DON PHILLIPS
Illuminating Engineer
Lamp Division, General Electric Co.
Nela Park, Cleveland

A CAREFULLY-PLANNED, expensive, lighting installation deserves an equally well-executed maintenance program.

An inept or incomplete approach subjects the user to two costly budget leaks. On the one hand, the tie-in between levels of illumination and production means the latter suffers when lighting deteriorates. In addition, cost of operating the lighting system itself is the same even if money spent each month for electrical energy doesn't actually produce light.

Procedures to keep lighting costs in line will vary in some respects according to individual plant requirements, but will necessarily incorporate the same basic factors. Here is a general outline that defines these essentials. Running Check—Loss of illumination is continuous, so periodic light meter readings are essential. Any lighting installation will decline rapidly in light output if nothing is done to offset effects of dust and dirt accumulation, burnouts, lamp depreciation and voltage drop.

The human eye notes lamp outages readily. But other factors that cause a steady decline in light are all but imperceptible. Periodic measurements, therefore, become vital to determining when cleaning, painting and replacement are in order.

Scheduling—Dust and dirt can reduce light output by 50 per cent in a comparatively short time. Just how short this time is in various plant locations should be the basis

#### TABLE I

### FOR EFFECTIVE LIGHTING MAINTENANCE

- 1. Take light meter readings periodically
- 2. Establish a regular schedule for cleaning lamps and fixtures as determined by light meter readings
- 3. Maintain an adequate stock of spare parts
- 4. Make periodic voltage checks
- 5. Clean or repaint all reflective surfaces when warranted
- 6. Make use of special equipment available to hold down costs and simplify operations
- Make electrical repairs immediately
- 8. Determine the most satisfactory and economical plan for lamp replacement

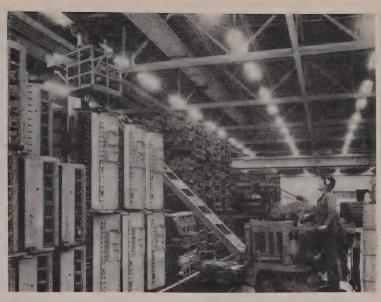
for a definite schedule for cleanin lamps and fixtures. Time betwee cleaning jobs will hinge on the meter's findings of dust accumulation rate and the practical economics of scheduling workmen's tim-In some areas, cleaning every feweeks may be necessary; in others, wice a year will be considered suficient.

When cleaning, don't be satisied with wiping lamps and fixures with a damp cloth. Both hould be washed thoroughly. Use f a detergent that doesn't require insing will save time. One approach to the cleaning cloth probem: Make arrangement for obaining worn out diapers from a ocal didie wash.

Spare Parts—Failure of any part of the system will impair light utput. But the loss can be minimized by an adequate stock of pare parts. This is particularly rue of lamps, sockets, ballasts and tarters. In fluorescent installations, use of watchdog starters is ecommended highly.

Test kits containing a full line of instruments to check fluorestent lamps, starters and ballasts puckly and conveniently are a great time saver.

Check Voltage—Both incandescent and fluorescent lamps are nanufactured to give a rated outout at a specific voltage. To get the nost light out of lamps, know the ine voltage on which they will op-



In more crowded areas, a boom truck may be necessary. These two men maintain 16,254 lamps, using this self-powered truck with elevating platform and a light aluminum rolling platform that can be assembled in 5 minutes

erate and make sure lamps, ballasts and starters are those designed for that line voltage.

Then set up a regular system for checking out voltage to see that it stays within specified limits. Reflective Surfaces — Color of walls, ceiling, floors and machines greatly affects the efficiency of any lighting installation. Therefore, it's wise to keep an eye on reflective surfaces and make sure



Fixture replacement or cleaning is simplified by mechanization. Lift is controlled by pushbuttons on the platform, water is pumped to platform from tank in machine



Portable wash and rinse tank designed at G-E's Nela Park combines washing, rinsing and drying operations. Easily maneuverable, its use can reduce washing and drying time

#### TABLE II HOW TO FIGURE COSTS OF SPOT AND GROUP RELAMPING

These examples are based on the 40-w fluorescent; an hourly labor rate of \$2.70 including direct overhead; and 20 minutes time to change a lamp.

First, determine these 4 basic figures:

ı i	Exampl
1. Net Lamp Price	•
Lamp list price, plus tax	88c
2. Spot Labor Cost Per Lamp	
Hourly labor rate divided by	
number of lamps changed per hour	90c
3. Group Labor Cost Per Lamp	
Usually 10% to 20% of Spot Labor Cost	9c
4. Number of Lamps in Installation	100
Spot Relamping in Average Lamp Period	
Spot Relamping—100% Life Lamp Cost = 100 × 88c. \$	88.00
Spot Labor Cost = 100 × 90c	90.00
TOTAL COST\$	178.00

Group Relamping for an Equal Period

Plan No. 1—Group Relamping at 80% Life—20% Spot Replacement (Selected used lamps are employed for spot replacements. Since relamping period is at 8/10 of life, costs are multiplied by 10/8 to cover an equal life period.) Lamp Cost =  $100 \times 88c \times 10/8$  \$110,00 Spot Labor Cost =  $20 \times 90c \times 10/8$  22.50 Group Labor Cost =  $100 \times 9c \times 10/8$  11.25

Plan No. 2—Group Relamping at 70% Life—No Spot Replacement (Since relamping period is at 7/10 of life, costs are multiplied by 10/7 to cover an equal life period.) Lamp Cost =  $100 \times 88c \times 10/7$  \$125.71 Group Labor Cost =  $100 \times 9c \times 10/7$  \$12.86

TOTAL COST

TOTAL COST ..... \$138.57

they're cleaned or repainted when conditions warrant.

Dark or dirty surfaces can absorb as much as 90 per cent of the light that reaches them. Clean, light-colored surfaces reflect as much as 90 per cent. Recommended reflectance value for ceilings is 80 per cent; walls, 60 per cent; bench tops, 35 per cent; machines and equipment, 25 to 30 per cent; and floors, not less than 15 per cent.

Labor Savers—For almost every lighting maintenance function, special devices are available to hold down manpower requirements and get the job done rapidly. One example is the portable wash and rinse tank designed at GE's Lamp Division. This device combines washing, rinsing and drying operations, contains calrod heating units for the washing solution and rinsing tanks.

Other special equipment available includes telescoping and mobile platforms, portable scaffolds, relamping bridges, disconnecting hangers and catwalks. Obviously, a good look at the particular operation and type of building construction involved is necessary be-

fore loading up with special equipment. Three factors that must always be considered: Operators' safety, easy maneuverability and, where necessary, noninterference with work below.

\$143.75

Lamp Replacement-An economical plan for lamp replacement is essential to holding down maintenance cost. In most plants, there are two important reasons why it is unwise to postpone flourescent lamp replacement until burnout. First, cost of replacing lamps individually is high; second, all lamps depreciate with use and a period eventually is reached when they should be replaced if good light levels are to be maintained. a result, group relamping is probably the most economical in most installations.

However, any group relamping approach should follow only after thorough investigation of individual requirements. Table II advances the facts of lamp life that will affect these considerations.

Starting with a new lighting installation, the greater part of lamp life passes with few failures. In this period, spot replacement is

the least expensive. But, near the end of rated life, burnout rate increases sharply. That's the time to replace the entire lot, before labor costs become prohibitive.

Most Economical Point—It is possible to relamp at the most economical point—without book-keeping—simply by gaging relamp time by number of burnouts.

One effective plan works like this. After 80 per cent of the average life of all lamps is used up, only 20 per cent of the lamps will be burned out. The best 20 per cent of the remaining lamps is set aside or marked, while still in the fixtures, for future use as spares. Then new lamps are put in all sockets. Individual lamps are replaced as they burn out from the stock of spares. When the stock of spares is exhausted, it's time to repeat the cycle.

No Spot Replacement—A variation is employed by some firms to eliminate all spot replacements—and work interruptions—by relamping earlier in life. It's practical if some burnouts can be left in the sockets between relamping periods. An example might be found in high mounted fixtures in large areas. Savings of earlier relamping under these conditions are even more impressive than the 20-per cent burnout figure where labor cost is high compared to lamp cost.

In the latter technique, the figure used to define the replacement point is 10-per cent burnout. This will be reached when about 70 per cent of average lamp life has passed.

Cost calculations in Table II will vary with each installation But, by substituting individual costs for those in the illustration it should be possible to determine quickly what net cost will be or each of the three methods and which technique will be most economical.

Co-ordination — Common sense of course, is an important facto at all stages. For example, combining operations saves manpowe and eliminates work stoppages, swork should be co-ordinated at a possible stages. Two of the morobvious are relamping and clearing. Adjustment in the scheduset up for either function should mean considerable savings in direct labor.



Sandvik's catalog gives thickness width, hardness, types of edges and weight in pounds per hundred feet. Also includes useful reference tables ... Weights of Strip Steel, Comparative Table of Wire Gauges, Numerical Conversion Tables, Hardness Conversion Tables and a Temperature Conversion Table.

#### SANDVIK SWEDISH SPECIALTY SPRING STEELS ARE USED FOR:

Textile Machine Parts such as sinkers, needles, etc. • Band Saws (metal, wood and butcher) . Camera Shutters . Clock and Watch Springs . Compressor Valves . Doctor Blades • Feeler Gauges • Knives such as cigarette knives, surgical instruments, etc. • Razor Blades • Reeds • Shock Absorbers • A Wide Variety of Springs • Trowels • Vibrator Reeds • Piston Ring Segment and Expanders, etc.

SS-102

Sandvik's wide range of sizes and grades gives you a better chance

of getting a steel that fits your application "like a glove".

You see, Sandvik's Catalog is literally a bookfull of answers to specialized steel requirements. It lists hundreds of sizes in various analyses of both cold rolled and bright annealed steels and hardened and tempered steels. Take a look. You can probably put your finger on the size, finish and physical performance that's exactly right for you.

Sandvik Swedish specialty strip steels are available:

- In specialized analyses for specific applications.
   Precision-rolled in thicknesses to fit your requirements.
- In straight carbon and alloy grades.
- Annealed, unannealed or hardened and tempered.
- Polished bright, yellow or blue.
- With square, round or dressed edges.
   Wide range of sizes in stock—also slitting facilities available.

Have the Sandvik catalog handy for present or future reference. A brief note on your letterhead, will bring you your complimentary copy.

SANDVIK STEEL, INC.

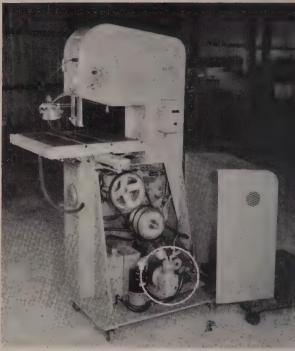
111 EIGHTH AVE., NEW YORK 11, N. Y. WAtkins 9-7180 230 N. Michigan Ave., Chicago 1, III., FRanklin 2-5638 1736 Columbus Rd., Cleveland 13, Ohio, Cherry 1-2303 3609 E. Olympic Blvd., Los Angeles 23, Cal., ANgelus 3-6761 SANDVIK CANADIAN LTD., P. O. Drawer 430, Station O, Montreal 9, P. Q. SANDSTEEL SPRING DIVISION . New York . Industrial Springs SANDVIK SAW & TOOL DIVISION . New York . Saws and Tools



### DeVilbiss helps you get the most from the spray method



• FINER FINISHES—The DoAll Company relies on DeVilbiss spray equipment for durable, gleaming finishes on its band machines, surface grinders.



2. COMPONENT PARTS — DeVilbiss Air Compressors supply pressure that forces a jet of air and coolant against the saw blades in DoAll Band Machines.

### DEVILBISS HELPS DOALL TWO WAYS!

The DoAll Company, Des Plaines, Ill., produces saw-band machines capable of cutting every known material. It also makes surface-grinding machines so precise they can erase a pencil mark on a slab of steel without marring the surface!

DoAll uses DeVilbiss equipment two ways: they use DeVilbiss Spray Guns and Spray Booths to paint their world-famous tools, and they use DeVilbiss Air Compressors as a component in their band machines.

Says DoAll's Clinton Rosene, "We give our customers quality throughout the machine — that's why we selected DeVilbiss equipment. De-Vilbiss Air Compressors give dependable service with little or no attention. Our DeVilbiss spray-

painting equipment assures attractive, long-lasting finishes."

DeVilbiss can help you improve your product with finer finishes, and with quality components such as hose, hose connections, air-line regulators and filters. Get complete facts, today, from your nearest DeVilbiss jobber or branch office; or write us direct for free literature.

THE DEVILBISS COMPANY, Toledo, Ohio — Santa Clara, Calif. • Barrie, Ontario • London, England



Air Compressors



Hose and Connections



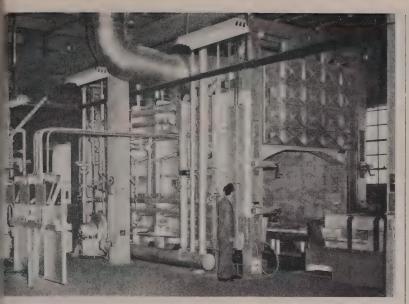
Spray Gun



Spray Booths



BRANCH OFFICES AND DISTRIBUTORS IN PRINCIPAL CITIES THROUGHOUT THE UNITED STATES, CANADA AND THE WORLE



Three cars take full advantage of the furnace at all times, protect against oxidation during heating and cooling. Cars are switched in and out in 5 minutes

#### Car-Type Furnace Makes Heat Treating Continuous

Heat range is 1200 to 1800°F, operating on an 8-hour heating and 16-hour cooling cycle. Temperature control records externally and internally every 15 seconds

CAR-TYPE furnace makes bright annealing, normalizing and stress relieving an almost-continuous operation at Steel Processing Corp., Brooklyn, N. Y.

Three cars are used to take full advantage of furnace at all times and to protect against oxidation during heating and cooling. Cars can be switched in and out of the furnace in 5 minutes.

Wide range of shapes in both ferrous and nonferrous metal in individual batches up to 16 x 7 x 3 feet high and weighing up to 30,000 pounds can be handled. Installation is said to be the only bulk facility for handling low carbon steel in the New York metropolitan area; about 50 per cent of the plant is devoted to job work.

Temperature Control—The overfired and underfired Lithium Co. furnace heats in range of 1200 to 1800° F and operates on an 8-hour heating and 16-hour cooling cycle. Six zone temperature control records externally (head temperature) and internally (coil temperature) every 15 seconds. This two-point control minimizes heat loss in intermediate heat zone and allows operation of furnace at whatever head is desired.

Cars measure 200 x 84 x 42 inches high; all-welded muffle hoods of 430 stainless steel are packed with fine grain zircon sand for air-tightness. Air cooling ducts allow full annealing or slow cooling; they also serve as stiffening members to position brick work.

Heat Removal — When moved out of furnace for cooling, car is positioned at pre-located stations by limit switches. It skids over a gasket and plugs into a duct which locks in position automatically for heat removal.

Direct-fired atmosphere is used at the start in ratio of six parts air to one part natural gas. Cracked city gas is employed. Vapor compression unit lowers dew point of air to prevent decarburizing low and medium carbon steels at elevated temperatures. Lithium is employed in generator unit as catalyst to assist in cracking gases generated. Cars have built-in vaporizers for adaptation to lithium recuperative process if operation at elevated temperature is necessary in the future.



## New DeVilbiss Air Compressor pays for itself

It's true. Many times a new DeVilbiss Air Compressor will actually pay for itself out of power savings alone! DeVilbiss Air Compressors give you up to 22.6% more air per power dollar. You gain, too, in lower maintenance and depreciation costs. If you have a compressed air problem, contact your local DeVilbiss jobber today.

Every DeVilbiss Air Compressor, from ½ to 15 hp., offers you: A Dependable DeVilbiss Compressor Unit, Check Valve Manifold, Automatic Pressure Switch, Quality Electric Motor or Gas Engine, A.S.M.E. Tank, Outlet Manifold and Quiet Efficiency V-belt Drive.

### THE DEVILBISS COMPANY Toledo, Ohio

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# Bay State Diamond Wheels



## ... for ANY "ENGAGEMENT"!



Engagements, diamonds, and life-time bonds have long been partners. So have BAY STATE, and "Grinding Wheel Progress".

The latest sparkling development is BAY STATE'S new Vitrified bond which holds *every* diamond particle until the last bit of its cutting ability is used.

Results: More uniform cutting rates, greater efficiency per unit of abrasive, still longer wheel-life, and . . . more grinding wheel progress by BAY STATE!

Besides this progressive step in bonds, we have ample stocks of diamond bort, and outstanding abrasive engineering service.

Together, these make BAY STATE a most reliable source of all your diamond wheel needs . . . in all bonds; vitrified, metal, or resinoid.





which includes net prices.

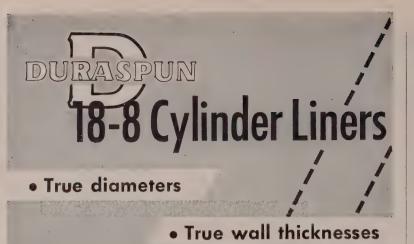
Manufacturers of all types of Quality Abrasive Products

BAY STATE ABRASIVE PRODUCTS CO., Westboro, Mass., U. S. A.

Branch Offices and Warehouses — Chicago, Cleveland, Detroit, Pittsburgh Distributors — All principal cities

In Canada: Bay State Abrasive Products Co. (Canada) Ltd., Brantford, Ont.

May 3, 1954



Tough, close-grain metal



Are you thoroughly familiar with the superior qualities of "centrifugally cast" high alloys...such as these cylinder liners, for example?

Centrifugally cast metal is exceptionally uniform, close-grained and strong. It is free of pits and pockets. It is capable of passing very rigid tests. And the practical advantage is that as long as there is a central circular hole, almost any outside shape can be cast. Some of our customers want their castings centrifugal even though considerable boring and other machining is necessary to finish the piece.

We recommend our centrifugal casting service if your requirements call for the characteristics outlined above. Our high alloy foundry is modern in every respect and staffed by metallurgists and foundrymen of many years' experience with both centrifugal and static castings.

## DUKALUY COMPANY

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#### Job Gets Carbide Swap

SWITCH of carbide cutting tools on a jet engine job cut downtime by two thirds, increased tool life 300 per cent and reduced tool breakage.

Operation at the Lynn River Works of General Electric Co. consists of turning and boring both inside and outside diameters, and then facing rims of jet engine turbine wheels. It required a new carbide tool every time an outside or inside diameter was completed.

This resulted in frequent tool changes and new setups. Furthermore, some 30 to 40 tools hit the



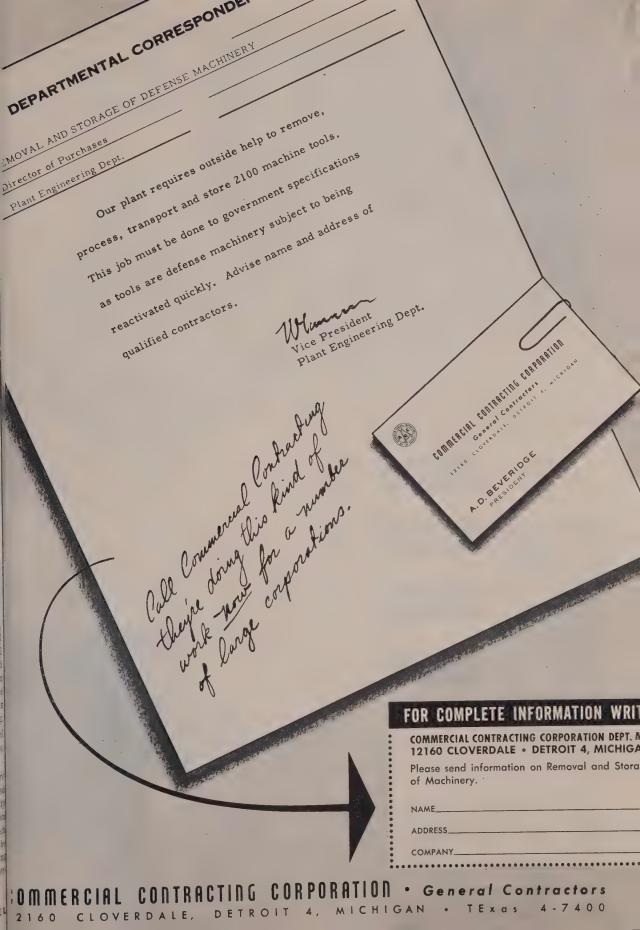
CARBIDE TACKLES JET WHEEL . . . cuts downtime by two thirds

scrap heap due to breakage. Even in boring, the attrition rate of the previously used carbide tool was high, since it lasted through only one cut.

Boost—Part is cold-worked, forged Timken steel with Brinell readings ranging between 269 and 321. In spite of this hardness and toughness, carbide grade now in use, Carboloy 370, produces three inside and outside diameter cuts before being ready for regrinding

In a week's time, only one too was broken, and this was due to weak brazing.

Tool Shape—Cutting tools are provided with a 15-degree lead angle, ½-inch radius and a chip breaker. Depth of cut varies from ½ to ½-inch, feed is 0.010-incl and speed is about 160 fpm on th outside diameter. Both cutting areas are flooded with a water soluble coolant.





These four important factors should be considered when appraising different kinds of metal abrasives:

Visit our Exhibit at the FOUNDRY SHOW Public Auditorium Cleveland, Ohio May 8-14 Booth 500—North Hall

L/D CUT-WIRE SHOT

Metal Blasting

for use in:

Cleaning

Peening

Cutting Abrading

Provides:

LONG LIFE UNIFORM SIZE

UNIFORM

**HARDNESS** 

LOWER COSTS

Tumbling

## SPEED

Rate at which the work is performed.

HARRISON Abrasives provide fast work, with effective abrading action.

FINISH

Appearance produced by the abrasive.

HARRISON Abrasives eliminate the dull uneven finish of a soft abrasive.

UNIFORMITY

Close control of particle size. HARRISON Abrasives are closely screened, consistent in analysis.



as a factor in the overall operation.

The fast action of HARRISON Abrasives means less cost.

These are some of the reasons why HARRISON Shot and Grit have always led the field for quality and reliability—made by the pioneers in the Metal Abrasive Industry.

Write for-latest Technical Bulletins



HARRISON ABRASIVE DIVISION
METALS DISINTEGRATING COMPANY, INC.

Elizabeth B, New Jersey

HARRISON Chilled SHOT - Diamond GRIT - L/D Cut-Wire SHOT

SUBSIDIARY OF AMERICAN-MARIETTA COMPANY

#### New Motor, New Grinder

Design incorporates new, smaller NEMA motors on belt grinders. Customer is happy

ONE of the first applications for an electric motor in the size range of the recent NEMA rerating of standards is reported by Stephen Bader & Co., Rockville Center, N. Y. Their new single-based polisher has been designed to accommodate a 2-hp, 3600-rpm, 3-phase motor directly on the balanced

Called the Space Saver, the new Bader machine mounts all operating components on a balanced base, making it easier for operator to change working heights from sitting to standing position. By loosening one bolt, he can swing the unit to desired position. Tracking and belt tension remain unaffected.

Motor Vital—Grinder is driven, in this case, by a GE Tri-Clad 55 totally-enclosed fan-cooled motor. Under the new standards, it is smaller and lighter than former models of the same horsepower.

Company engineers report that the new motors have showed improved operating characteristics and require very little maintenance. A completely sealed cast-iron housing helps protect the motor from metallic and abrasive dusts.

Differing from the conventional backstand grinding machine, the Bader unit uses the drive pulley as the backstand, with the frontstand idler pulley performing as the contact wheel.



SPACE SAVING GRINDER
. . . with space saving motor



As every industrial buyer knows, there are, broadly speaking, two different classes of fasteners.

> The first, and most widely used, are the "Standards". These include most of the common bolts and nuts.

The second class are the special purpose fasteners-or "Specials". As the name implies, these fasteners have features to meet special requirements.

Generally speaking, "Specials" are more expensive than "Standards" because they are more complicated to make and are not

produced in as large quantities.

As a full line manufacturer, Lamson & Sessions makes both types.

Naturally there are many applications where, because of the nature of the fastening problem, "Specials" are required. However, in some instances, Lamson has been able to suggest the successful substitution of a "Standard' for a more expensive "Special".

All of which boils down to this: Lamson & Sessions is interested in what is best for the customer from a value as well as a cost standpoint, That's another reason why its pleasant and profitable to do business with Lamson & Sessions.

#### The LAMSON & SESSIONS Co.

1971 West 85th St. . Cleveland 2, Ohio Plants at Cleveland and Kent, Ohio • Birmingham • Chicago

FOR PROMPT DELIVERY AND HELPFUL SERVICE. ORDER FROM YOUR LAMSON DISTRIBUTOR



#### **MACHINE SCREWS**

Precision made for fast, economical assembly.



PLUG NUTS ldeal for blind or hard-to-reach places.



#### TAPPING SCREWS

Choice of round, pan, truss, flat oval, hexagon and Phillips heads.



CAP SCREWS "1035" Hi-Tensile Heat-treated steel.



#### SQUARE AND HEX MACHINE SCREW WUTS

Also semi-finished, hot pressed and cold punched nuts.



#### **LOCK NUTS**

Economical, vibration proof. Can be used repeatedly.



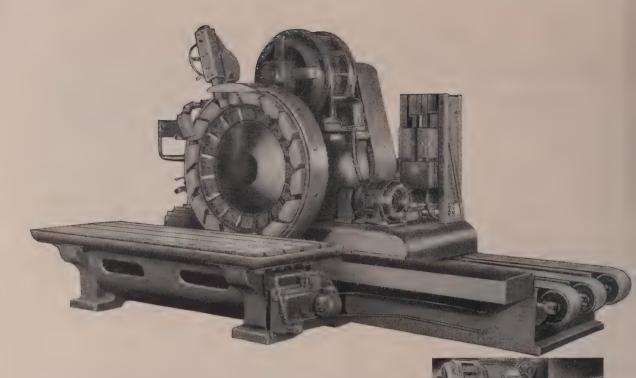
**COTTER PINS** 

Steel, brass, alu-minum and stain-less steel.



**SCREWS** 

Cup point type, hardened and heat-treated.



## MATTISON TRAVELING WHEEL GRINDER FOR FAST FINISHING OF LONG OR LARGE PARTS

If your work consists of long or bulky parts, Mattison UK Traveling Wheel Grinders will finish them at a surprising rate of speed and accuracy and at very low cost. Large and awkward shaped pieces are frequently ground in a good deal less time than previous method. The part, no matter how large, is clamped in a stationary position and the grinding wheel passes across the surface to be finished. Amount of floor space needed is little more than half that required by traveling table machines of equal capacity. The operator's position on the carriage, together with the convenient grouping of all controls, makes for utmost grinding accuracy and speed regardless of the size of the job.

For further information, send for new free circular No. 844-2 RM covering this machine.



The operator rides the carriage of the UK Traveling Wheel Grinder. From this position he gets a safe unobstructed view of the grinding wheel at point of contact and can observe the work at all times.



Heavy work of practically any length can be rapidly ground to close tolerances with no more power required than for lighter work — the UK's table is always stationary. Picture shows end of 35' base being ground.



MACHINE WORKS

ROCKFORD . ILLINOIS



#### **Mechanized Delivery**

Using an Automatic Transporter, one man services a battery of punch presses at Crown Cork & Seal Co.'s main plant in Baltimore. The mechanized equipment replaced a manual lift gack to feed the 2400-pound loads of tin plate. Seven other Transporters replaced manual equipment in departments throughout Crown Cork plant

#### **Automatic Hydraulic Grinder**

Jadco Inc., Cleveland, has patented an automatic hydraulic machine capable of grinding, polishing, surface grinding and profile grinding. Although holding patent rights, the firm will not produce the grinder itself and is seeking another company to take over manufacturing and marketing functions.

In above operations, machine's headstock speeds can be set from 78 to 1360 rpm; speeds can be set up to fit product by changing diameter. Head swing is 9 inches and longitudinal stroke is a minimum ½ inch to maximum 8 inches.

Longitudinal stroke speed can be slowed from 0 to 80 strokes per minute by adjusting flow control valve.

#### **Machine Tool Control Sessions**

Plans for a two week special summer program on the Automatic Control of Machine Tools, to be held from August 23 to September 3, have been announced by Massachusetts Institute of Technology.





#### Pays for itself in 3 Profitable Ways:

TOP SCRAP VALUE. Uniform short shoveling turnings produced by an American bring up to \$4 per fon more than regular machine shop turnings.

INCREASED CUTTING OIL RECOVERY. Up to 50 gallons per ton are released from turnings reduced in an American.

**EASIER HANDLING, STORAGE.** American-reduced turnings require but a fraction of the usual storage space.. are easily briquetted.



Available in 1 to 10 tons per hour capacities to meet your needs. WRITE today for the complete American profit story.

Originators and Manufacturers of Ring Crushors and Pulverizers

1539 MACKLIND AVE. . ST LOUIS TO MO

#### Oil Spray Controls Waste

USE OF OIL SPRAY to further improve the control of airborned wastes at an industrial plant has been achieved by co-operative action of the Disco Co., a division of Pittsburgh Consolidation Coal Co and Gulf Oil Corp.'s laboratories.

Results obtained indicated opportunities for preventing industrial smoke and dust, according to the laboratories. Further studies of industrial applications are contemplated.

Previous Controls—Previously Disco has spent about \$250,000 to control its handling, heating and crushing of coal and carbonized coal particles, in order to avoid objectionable quantities of dust and smoke. The results, though adequate, fell below the company objectives in cleanliness.

Results of New Method—Now after four months of test operations oil spray has nearly perfected the pollution control picture and resulted in a new high degree of cleanliness for an operation of this type.

Disco makes a coked pellet which is marketed on the basis of its excellent heating and clean burning qualities. In the process, crushed Disco (called fines) recovered from screening of the finished product is mixed with crushed coal, heated in roasters and kilns for low temperature carbonization and then reduced to maximum six-inch diameter size by crushing.

Tests Run With Oil — Next a series of tests was run at the plant, using a special oil provided by the laboratories. It was disseminated through a Gulf-developed nozzle designed to produce an unusually fine spray. Results proved decisive. When the oil hit the mixing point of the fines and crushed coal only a white vapor was given off. When the sprayed raw material was fed to the roasters, the only resulting discharges from the stacks were thin white plumes.

The oil apparently functions by coating the powdered fines and coal so that all dust is held on the surface and carbonized with the product. A certain amount of product is saved in this manner



# MICRO-POLISH strip grinding boosts output over 600 percent for Michigan manufacturer \* Assures Product Uniformity ★ Cuts Material Loss and Scrap \* Eliminates Down-time \* Replaces Two Expensive Hand Operations

The New Murray-Way rotary filter which efficiently reclaims coolant on this operation. Permanent filtering media saves the cost of this equipment in a short time.

- \* Facilitates Subsequent Operations
- \* Improves Product Appearance
- \* Eliminates Dust and Mess
- \* Pays For Itself

Here's one more illustration of Murray-Way's ability to do the job better, faster, and more economically.

Murray-Way's Automatic Equipment, thorough experience and expert engineering can save YOU money on YOUR polishing, buffing, grinding or filtering operations. Why not give us a call . . . JOrdan 4-6890 Detroit, or write for our complete, illustrated Micro-Polish Brochure.



#### MURRAY-WAY CORPORATION

P. O. BOX 180, MAPLE ROAD EAST . BIRMINGHAM, MICH.

Polishing, Buffing, Grinding, Filtering Equipment that automatically cuts your costs.

#### **Bulk Unloading**

Car unloading leaves pick and crowbar technique. A shaker speeds the job, adds safety

ALWAYS tedious, sometimes hazardous when it was a manual job, unloading of various bulk materials is now a mechanized operation for many firms. A good example is work done at Parker Appliance Co., Cleveland, where a portable car shaker has proved its merit over almost a year's use.

Installed in Parker's receiving yard on a powerhouse rail spur, the shaker is driven by a 5-hp, 1750-rpm, ac motor built by Reliance Electric & Engineering Co. Serving as a mount is a jib crane with 9-foot swinging boom, 1-ton high-speed chain hoist and 1-ton ball bearing trolley.

Positioning — To unload, the shaker is swung by the crane into position on the car and clamped to



UNLOADING BY PUSHBUTTON . . . time-saving is 62½ per cent

its side. One end of the steel bar clamp is hooked onto car's underframe; the other is fastened on with a heavy adjustable-tension screw on the shaker, which tightens the unit against car's side.

Time required to unload depends primarily on the speed at which the emptied contents can be removed into storage or to point of use. In conveyorized installation, conveyor speed determines speed of unloading, because the shaker is capable of keeping material handling equipment operating at full capacity. In instances where material is dropped into a large pit or from a trestle, coal cars have been unloaded in 4 to 10 minutes.

Results — At Parker, two men formerly were required to unload a car—and the job took 8 hours, often more. Also, a workman had to be on his toes to avoid losing his balance when the load shifted during unloading.

One man works the shaker and does it with a saving of about  $62\frac{1}{2}$  per cent per car compared with time required previously.

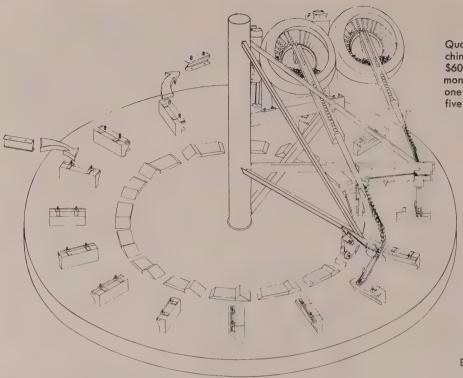
#### **Electronic Test Standard Set**

An international standard for testing electronic parts used in radio communcation and electronic apparatus—a major advance toward world standardization—has been published by International Electrotechnical Commission.

American Standards Association announces U.S. approval of the standard, whose purpose it is to meet a need for a common international language in testing and rating electronic components.



THE U. S. BURKE MACHINE TOOL DIV.
Brotherton Road 14, Cincinnati 27, Ohio



Quotations on bolt setting machines ranged from \$4000 to \$6000 each with four to five-month delivery. Two like the one at the left were built in five weeks at a cost of \$5000

By FRANK M. BUTRICK JR.

TWO WAYS . . .

## To Trim Fabrication Costs

By switching from stamped to rolled parts and mechanizing bolt setting, small firm making automotive stampings expects to save \$8000 on one job during next 8 months

FORMING and assembly shortcuts are expected to save \$8000 in 8 months on one job at a small Michigan firm that makes small automotive stampings.

The stamping is a Z-shaped, structural member, with four weld bolts projecting from the flanges—two on each side. When the job was prepared for quotation, plans called for three press operations: Pierce and blank (automatic), first form and restrike. Welding was the next step. Production was to be 8000 pieces a day.

Help Here—In view of production wanted, an outside engineering firm suggested opening tolerances for over-all length and for the relation of holes to the ends of the piece. With this setup, they

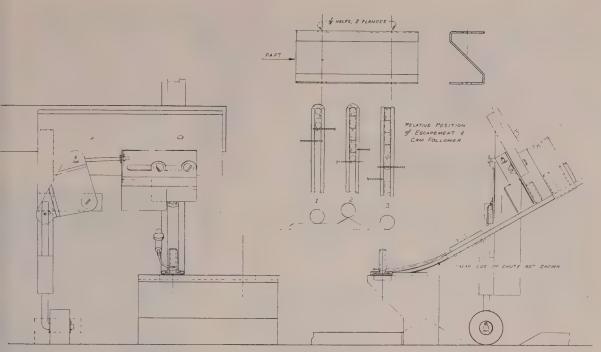
advised, the part could be pierced on an automatic, coil-feed press. After recoiling, the form could be produced on a Yoder mill that had some open time.

Part was quoted as a rolled piece rather than a stamping. Stamping required the services of three men: One to operate the coil-feed press occasionally and two on the forming and restrike operations. To roll parts, the coil-feed press was placed near the Yoder mill, and one operator tended both. The net gain was 20 manhours a day.

Of course, the pierce die and Yoder mills need constant attention. If the die wears and produces a burr, it will score rolls badly. But the die was designed with this eventuality in mind, and preventative maintenance has eliminated work stoppage.

Bottleneck—Second part of the savings came when production began. The cost department calculated rates for the piercing and rolling, the tedious job of setting bolts by hand and welding. It was found that the 8000 pieces a day could be pierced and rolled in about 1½ hours, bolt setting took 30 to 40 hours and welding 16 hours.

Welding was handled by two machines, with electrodes engineered for the job. The lower electrode supported the head of the weld bolt and was machined to clear the sloping center section of the work. Bolt spacing



Escapement device releases a bolt just before the fixture is under the end of bolt track. Wire causes bolt to slide across surface of alnico magnet

was maintained by the upper electrodes. They were tubular and insulated with a sleeve of nylon (0.007 inch thick) to protect threads on the bolts.

The "air" in the part was bolt setting. Management decided immediately to mechanize this operation, but owing to the isolated location of the plant, valuable time was lost getting even "thumb nail" quotations from distant sales offices. Quotations averaged from \$4000 to \$6000 a unit (two were required); delivery time was set at from 4 to 5 months. So these plans could not be followed.

Dilemma—The job was to last only until the fall of 1954; and the equipment, as quoted, bit deeply into possible savings. More importantly, estimated delivery dates would have left only 3 to 4 months for production.

The problem was dropped into the lap of a local tool firm. They designed and built the two units in 5 weeks for \$5000.

Requirements—The machine has a rigid central column, upon which are mounted the hopper-feed units with their tracks and escapements; a round table contains work fixtures and cams to operate the feed escapements.

The rotary table is driven by a variable speed motor, adjusted to deliver 1000 parts each hour to the welder. At this speed, one girl can drop the parts over the bolts as they come past.

Knottiest problem was devising a way to hold the two bolts. With upset heads, they are irregular in size and shape, but they must be held the proper distance apart and with enough rigidity so a girl can drop the sheet metal component over them every 3.5 seconds. Bolts also must be released so the welder can pick them up.

Solution was found by making the fixture blocks from bronze and setting alnico magnets into them.

How It Works—The escapement device, actuated by cams on the table, releases a bolt just before the fixture is under the end of the bolt track. The bolt slides down to the end of the track, where it is held by a piece of spring wire. As the fixture comes by, the wire causes the bolt to slide across the surface of the magnet, until a small block on the fixture contacts the bolt head and forces it out of the track and past the spring.

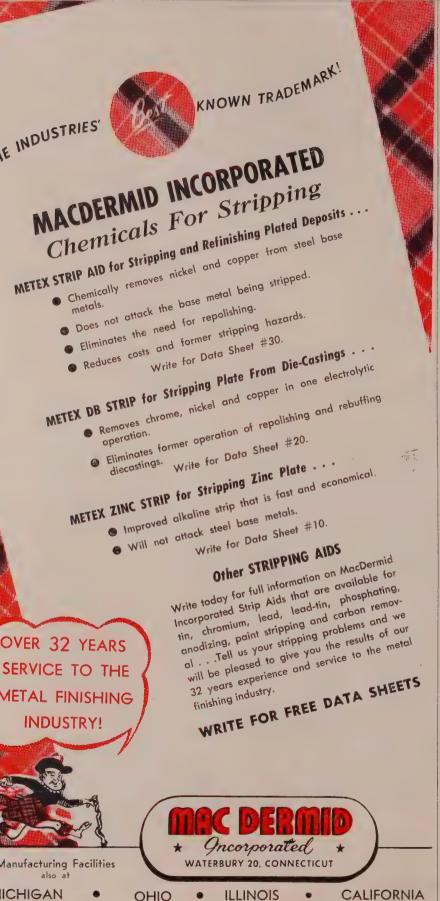
The girl operator then drops the

sheet metal component over the bolts, and the welder slides the part off the fixture as it comes to him by grasping the bolts. Should he miss one of the parts, a safety switch, triggered by a rod positioned to be tripped by a bolt remaining on a fixture, prevents damage to the bolt tracks.

Plan of Action—The two machines were built in 5 weeks. Engineering took about two days. Work on the tables, columns and fixtures started at once. A hasty search of Midwest dealers of used machinery uncovered four hopperfeed, screw-drivers that were purchased for \$500 each. The bowl feeds only were used, and new collector rings were ordered immediately.

By the time collector rings arrived, the machines were built; the fixtures and cams were located on the rotary table; the hopper feeds were overhauled and installed; and tracks and escapements were built and motors installed.

The story is an example of how small-plant management, if it looks ahead, can make quick, sound decisions when they count the most in a period of sharp competition.



#### Atom in Steelmaking

THE ATOM is a steelworker! It's been one since a fission product of uranium was used in a new gage that continuously measures the thickness of metallic coatings on a rapidly moving steel strip. Improved quality control and increased efficiency in coating operations are made possible utilizing



Gaging head ranges back and forth across width of zinc-coated strip

the gage, which also creates the opportunity for automatic control of the coating process.

The Accuray reflection gage is the result of a three-year joint research program by Armco Steel Corp. and Industrial Nucleonics Corp., Columbus, O. Initial application of the gage, in Armco's continuous zinc-coating process, is to instantaneously determine weight of coating only minutes after steel strip leaves the zinc pot.

How It Works—Heart of the new gage is a radioactive element which emits beta rays. A radiation detector picks up the rays reflected by the coated steel. These impulses are translated in an electronic unit into inked lines on a recording chart. Lines indicate thickness of coating in standard units.

Gaging head automatically ranges across the width of the strip and gives the coating weight on the entire length of steel strip. Armco uses two gages to measure coating on both sides of the strip. It detects even minor variations in coating weight and compensates for changes in humidity, 'temperature and dust content of the air.



## PRODUCTS

## and equipment

Reply card on page 147 will bring you free literature, editorial clips or more information on new products and equipment described or advertised in this issue

#### **Drying Tunnel Kits**

. . . for screen process drying

Air-flow drying tunnel kits offer quick, low-cost assembly of far-infrared tunnels for improved screen process drying. They also offer far-infrared advantages of rapid, controlled drying and saving of floor space.

Two models are available to fit most frequent production needs.



With each, belt speeds from 5.6 to 23.4 fpm can be obtained and intensity of the all-metal heaters can be varied from 4 to 100 per cent of their capacity. Each kit provides components required to construct a tunnel with 36-inch-wide belt. Edwin L. Wiegand Co.

FOR MORE DATA CIRCLE NO. 1 ON REPLY CARD

#### **Fiber Drum**

#### . . . dispenses wire quickly

The Payoffpak system of handling many types of wire is a labor saver.

As wire comes off the drawing machine, it goes around a revolving capstan, passes through an eyelet or feed pipe and is laid loose into the rotating fiber drum. When the drum is full, the "hat" is lowered, the cover lever-locked on and the Payoffpak is ready for shipping.

To dispense wire for drawing

or fabrication, an operator pulls the loose end of the wire from the top of the drum, threads his machine and the wire is ready for



use. The Payoffpak accommodates up to 500 and 600 pounds of continuous, ready - to - use lengths. Continental Can Co.

#### **Liquid Floor Etch**

. . . for better paint adhesion

To provide better adhesion between paint and old or new concrete floors, a liquid floor etch is announced by Tropical Paint & Oil.

Etch is applied after thorough cleaning. A stiff broom spreads it easily over the entire area. In 15 to 30 minutes etching action is complete. Area is then flushed with clean water and swept or mopped. After drying, floor is ready for paint. Tropical Paint & Oil Co.

FOR MORE DATA CIRCLE NO. 3 ON REPLY CARD

#### **Battery Charger Line**

. . . from 10 to 42 cells

Lincoln announces production of a line of battery chargers which it is adding to its product line.

Three models are available to cover charging requirements for batteries of 10 to 42 cells. Model S9640 is designed for batteries of 10 to 15 cells used with the walkie-type truck. Model S6088 is for 10 to 30-cell batteries for heavyduty trucks of the walkie and



rider type. Model S9607 charges Nickel-Iron-Alkaline batteries with 21 to 42 cells. Lincoln Electric

FOR MORE DATA CIRCLE NO. 4 ON REPLY CARD

#### **Storage Battery**

. . . more power per size

A storage battery supplying more capacity relative to its size than any previous Edison Nickel-Iron-Alkaline storage battery is announced by the Edison Storage Battery Division.

Designated as the MC-type, it affords a means of supplying most electric trucks with as much as 25 per cent more capacity without changing either steering wheel or pedal heights and without increasing either length or width of battery boxes. Cells of the MC-type battery employ standard steel-type and pocket construction. Standard assemblies range from 10-cell MC4,



### **NORTHERN**

## MAGNET HANDLING, ELECTRIC OVERHEAD TRAVELING CRANES

Higher Speed
You can handle more turnover in a given space, or a fixed turnover in less space, with a Northern Electric Overhead Traveling Crane. Desired higher operating speeds are available through various combinations of bridge, trolley, and hoist travel speeds.

Dependability
You can make most advantageous use of yard space without fear of crane break-downs. Yard cranes are purposely built and equipped for rugged, 24-hour continuous service. They have only the heaviest duty type bearings, gears, end trucks, highest quality motors, controls, and other electrical equipment.

Visibility
Safer, better, faster
load handling and
stacking is possible because the
operator has better visibility from the
Northern Clear Vision Control Cab.

Low Cost
Operation

Northern Magnet Handling, Electric Overhead Traveling Cranes cost less to operate—have oil bath ubrication which eliminates necessity for daily lubrication and crane idle time—have fewer parts to wear out, fail, or replace.

When you investigate, ask for Bulletin No. 141-C.

NORTHERN
ENGINEERING WORKS
210 CHENE ST.
DETROIT 7, MICHIGAN

### NEW PRODUCTS and equipment

rated capacity 3.42 kwhr, to 42-cell MC10, rated capacity 35.78 kwhr. Thomas A. Edison Inc.

FOR MORE DATA CIRCLE NO. 5 ON REPLY CARD

#### **Bench Centers**

#### . . . streamlined, modernized

Changes in design and improvements have been made on the Brown & Sharpe bench centers.

The bench has been streamlined and modernized. Of U cross-section, it is heavily ribbed with a three-point bearing. Headstock



and footstock are adjustable individually and can be locked in any positon. They are furnished with or without dial test indicators.

Headstock and footstock of the centers swing 8 inches in diameter and take work 36 inches in length. Raising blocks can be furnished which increase the capacity of the centers to work 16 inches in diameter. Brown & Sharpe Mfg. Co.

FOR MORE DATA CIRCLE NO. 6 ON REPLY CARD

#### **Plating Barrel**

#### . . drive eliminates gears

Plating barrel design offers industry a high rate of plating production with savings of up to 100



per cent in maintenance manhours.

A dual v-belt suspension drive eliminates transmission gears and cylinder bearings, which are subject to wear and corrosive damage. Cylinder is suspended in the tank from the superstructure by two equal-length v-belts running from drive shaft pulleys to grooved circumferences at both ends of the cylinder. Cathode contact is made by a self-cleaning, inverted v-block 12 inches long on each end of the superstructure. As the superstructure is lowered, guide channel directs it automatically into proper operating position. G. S. Equipment Co.

FOR MORE DATA CIRCLE NO. 7 ON REPLY CARD

#### **Screw Machine**

#### . . . one cycle works two sides

Screw machine which machines both front and back of workpieces



in one complete cycle is announced by Porter-McLeod.

Double-Matic utilizes a tool-holding turret revolving on an axis parallel to the spindle. Stock is fed through, clamped and machined on the front side. Final turret position is occupied by a live spindle that contains a collet and runs at same speed as main drive spindle. This live spindle grips the workpiece, supports it during cut-off and continues to hold it. While turret tools machine next piece, back end is machined by tools mounted on headstock. Porter-Mc-Leod Machine Tool Co. Inc.

FOR MORE DATA CIRCLE NO. 8 ON REPLY CARD

#### Air Balance System

#### . . . eliminates counterweight

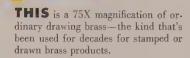
To eliminate expensive counterweight assemblies on vertical machines Buhr introduces an air bal-



### You don't need 3-D glasses

ACTUAL SIZE

to see the difference



**THIS** is a 75X magnification of superfine-grain Formbrite.\* Isn't it obvious that this new type of brass can be polished in half the time? Frequently, a simple color buff will bring up the desired finish for lacquering or plating.

**AND,** Formbrite is harder, stronger, springier and more scratch-resistant than ordinary drawing brass, yet has demonstrated its remarkable ductility for forming and drawing operations, and ability to take sharp, clean-cut ornamental die impressions.

With all these advantages, Formbrite costs no more. What can we do to help you try this time and cost-saving metal? Mail you a booklet? Send you a sample? Ask our Sales Representative to call? Simply write to The American Brass Company, General Offices: Waterbury 20, Conn. In Canada: Anaconda American Brass Ltd., New Toronto, Ontario, Canada.

\*Reg. U. S. Pat. Off. 5485

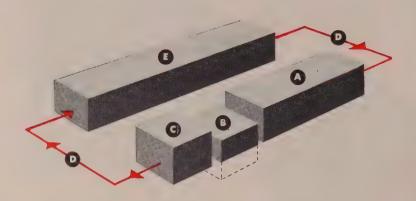
Here's an example of Formbrite at work. These pen caps are made of .0125"-thick Red Brass Formbrite strip at the rate of 2,000 an hour on a thirty ton, 10-step multiple plunger press. Caps are buffed at a higher rate than with any other metal previously used.

DRAWING BRASS

an ANACONDA Product
made by The American Brass Company

### Heat Treat Furnace Layout

by Holeroft ... 7th of a Series



- SOLUTION FURNACE (8 HRS. @ 940°F.)
- 1 HOT WATER QUENCH
- BLAST QUENCH

- **D** AUTOMATIC TRANSFER
- PRECIPITATION FURNACE (13 HRS. @ 460°F.)
- TRAY TRANSFER

## Controlled Heat Treating of Forged Aluminum Parts

A battery of five installations like the one above—each over 100 feet long—treats 11300 pounds of aluminum forgings every hour in a government project in the midwest.

Parts go through a solution furnace and then are either quenched in hot water or blast cooled with air. Forgings are automatically transferred to a precipitation furnace where they are age hardened. Temperatures are held within plus or minus 5°F.

Tough job? Not particularly! All Holcroft installations, from the smallest to the largest, can be designed around automation—the elimination of the human element. On top of that, when necessary, furnaces can tie right into the production line.

It doesn't take long for installations like these to pay off in a BIG way! Holcroft & Company, 6545 Epworth Blvd., Detroit 10, Michigan.

### HOLEBOTT & COMPANY

#### PRODUCTION HEAT TREAT FURNACES FOR EVERY PURPOSE

CHICAGO, ILL. . CLEVELAND, QHIO

HOUSTON, TEXAS

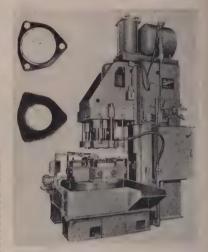
PHILADELPHIA, PA.

CANADA Walker Metal Products, Ltd. Windsor, Ontario EUROPE \$. 0. F. I. M. Paris 8, France

### PRODUCTS and equipment

ance system. System operates at 50-pound line pressure and storage tank cuts air consumption to a minimum. It is fully equipped with a safety device to guard against air failure or creepage during idleness.

This machine bores, drills and chamfers two automotive steel



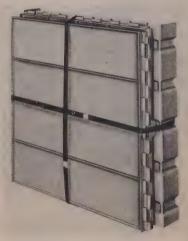
flanges at a time, at a rate of 329 pieces per hour gross. Holding fixture, mounted on an automatic index table, is arranged with hydraulic clamping. Buhr Machine Tool

FOR MORE DATA CIRCLE NO. 9 ON REPLY CARD

#### **Box and Skid Unit**

. . . lightweight, collapsible

A lightweight, collapsible steel box and skid unit for shipping is



the newest product of Republic's Pressed Steel Division.

The Collaps-a-tainer combines

# 'I'll come to the point\_ how about the order?"



"THAT'S right, Mr. Brown! I'd like that order. And I'd like to tell you more about our special equipment and facilities. When you give us an opportunity to see the plant like this, we can point out other ways to help you cut costs."

"That's what we're looking for, Jim."

"Well, over there's a perfect spot for Wolverine Trufin\*. That's our integral finned tube, you know. That feature alone is important because—as the fins are part of the tube—Trufin will stand up under the shock of extreme vibration, temperature changes, or high pressures. Yes, and it will give you increased surface area—let you design a smaller shell—a lighter, more compact unit."

"And then there's our Spun End Process<sup>†</sup>. That's another Wolverine exclusive. By spinning we're able to close or partially close one or both ends of tubing. And do it in one operation, too!"

"Say that one-operation part sounds terrific. It should cut costs to ribbons."

"It does, Mr. Brown. Because in that one operation we can also reduce or neck-down the part. On such fabricated items as accumulators, driers, and other spun-end bulbs, it eliminates press work, reduces assembly time and cuts man-hours."

It adds up: Yes, it adds up to Tubemanship—the oneword picture of Wolverine's skill and facilities. More information? Write today for Wolverine's Statement of Scope. Fast service on an order? You'll get it—for sure!

WOLVERINE TUBE DIVISION of Calumet & Hecla, Inc., 1475 Central Avenue, Detroit 9, Michigan.

\*PEG U.S. PAT. OFF.

TA PATENTED PROCESS RE. 22465

Wolverine Trufin and the Wolverine Spun End Process available in Canada through the Unifin Tube Co., London, Ontario.



**WOLVERINE TUBE DIVISION** 

OF CALUMET & HECLA, INC.

Manufacturers of Quality-Controlled Tubing

ANTS IN DETROIT, MICHIGAN, AND DECATUR, ALABAMA

Sales Offices In Principal Cities

Export Dept., 13 E. 40th St., New York 16, N.Y.

### NEW PRODUCTS and equipment

features valued by shippers and users of material handling equipment — strength, light weight, compactness. It weighs approximately 100 pounds, is constructed of 18-gage steel throughout with 16-gage reinforcements. Inside container is 30 x 30 x 30 inches. Fully collapsed package is  $31\frac{1}{2}$  x  $31\frac{1}{2}$  x 9 inches. Republic Steel Corp.

FOR MORE DATA CIRCLE NO. 10 ON REPLY CARD

#### **Bead-Type Sealer**

. . . easy to handle, apply

A prepared bead-type sealer, Kopeseal, has been developed for use between cope and drag in casting operations. It is a permanently soft mastic compound extruded and furnished in neat, rope-like beads. Easy to handle and apply, it can be used on any size mold to determine whether cope is properly seated, then serves as a gasket-like seal that helps prevent run-outs.

It prevents the metal from flowing around the core print and into the core vent when the fit of the core is loose. Kopeseal is furnished in easy-to-store flat pack cartons



in lengths of 30 inches and in diameters of 3/16,  $\frac{1}{4}$ ,  $\frac{3}{8}$ ,  $\frac{1}{2}$ ,  $\frac{5}{8}$  and  $\frac{3}{4}$  inch. Presstite Engineering Co. FOR MORE DATA CIRCLE NO. 11 ON REPLY CARD

#### **Glass Fiber Insulation**

. . . ready to apply

Manufacturers with assemblyline operations can obtain glass fiber insulation molded to fit regular and irregular surfaces and ready to apply in assemblies with all the speed and ease of machine parts. A new process permits the manufacture of molded-to-shape parts composed of resilient, plastic bonded Ultrafine glass fiber insulation.

Ultrafine insulation parts can be molded in any size up to 8 x 10 feet in densities varying from 2 to 10 pounds per cu ft and thickness-



es varying from  $\frac{1}{8}$  inch up, depending on density. Gustin-Bacon Mfg. Co.

FOR MORE DATA CIRCLE NO. 12 ON REPLY CARD

#### **Roof Coating**

. . . forces temperature drop

Liquid aluminum heat barrier immediately reflects the infra-red rays of the sun, forcing temperature to drop until it approaches temperature in the shade.

For buildings where an air conditioning installation is prohibitive, this aluminum asbestos roof-

## MAY-FRAN

## ENGINEERED SCRAP HANDLING

1547-MF



#### ELIMINATES SHUT-DOWNS

Remove scrap automatically and continuously . . . speed up production . . . with a MAY-FRAN automatic handling system. MAY-FRAN CHIP-TOTES remove chips, turnings and borings from operating machine tools . . . eliminate down-time for manual scrap removal. MAY-FRAN hinged steel belt conveyors then transmit scrap to disposal point or through shearing and baling processes.

### PRODUCTS and equipment

ng is a logical answer. Where ir conditioning is already in operation, it promises to save hun-



dreds of dollars in operating costs by reducing the heat load. Coonial Refining & Chemical Co.

#### Wire Rope Processing

. . mechanically splices eyes

Processing system employs an aluminum alloy clamp or sleeve that is squeezed around wire rope

in a 300-ton hydraulic press, eliminating hand splicing. Called JalKlamp, the device is used as a mechanical method of splicing eyes, with or without thimbles, in the ends of wire rope. This splice gives 100 per cent of the breaking strength of the wire rope itself.

Sleeve material is a special noncorrosive aluminum alloy that combines great strength with ability



of cold flowing under pressure at room temperature. Jones & Laughlin Steel Corp.

FOR MORE DATA CIRCLE NO. 14 ON REPLY CARD

#### Air Press

. . . adjustable limit control

The Vi-Speed Power House bench-type air press assembles,



bends, straightens, punches, stamps, trims, rivets, broaches, crimps and swages.

It offers simple rugged construc-



## Guaranteed Results from FURNACES · OVENS · DRYERS





tion utilizing Vi-Speed air cylinder power units of 50:1 ratio,  $1\frac{1}{2}$  and 6-inch stroke, plus an exclusive adjustable air stroke limit control. The 2-inch ram is nonrotating, with ram extensions supplied for quick and easy adjustment to work requirements. It will handle off-center work, and work can be entered from all four directions. Van Products Co.

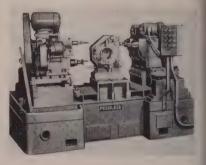
FOR MORE DATA CIRCLE NO. 15 ON REPLY CARD

#### **Boring Machine**

#### . . . precision positioning device

A double-end precision boring machine made by Peerless features a hydraulically-actuated cross-slide with high precision assured by a power-operated mechanical take-off device. Latter also clamps slide in position during machining cycle.

Precision positioning device permits boring of close-center-distance



holes in a single setup without sacrificing benefits of one-time-part fixturing and the desirable longitudinal platen travel features. Designed and built to process pump housing assemblies, this machine performs boring, chamfering and trepanning operations to precise specifications. Peerless Production

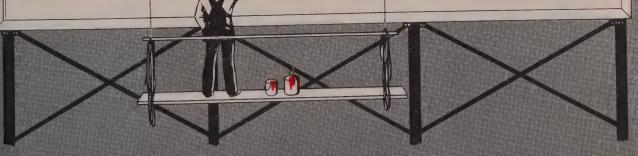
FOR MORE DATA CIRCLE NO. 16 ON REPLY CARD

#### Hydraulic Power Unit

#### . . . with long stroke

A quill-type hydraulic power unit for actuating tools in a special machine has a capacity of 3 horse-power and a stroke of 8 inches. A companion unit, the Style 22-L, is identical to the style 22 except that it has a 12-inch stroke. The new models are self-contained, hydraulically operated and designed

when you buy from Levinson you can bank on getting your steel fabricated exactly the way you ordered it. and delivered exactly when you need it

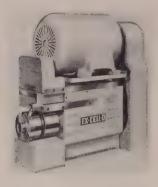


Levinson Steel Company 20th & Wharton Sts., PITTSBURGH 3, PA.

DISTRIBUTORS AND FABRICATORS FOR THE STEEL INDUSTRY

to accommodate single tools or multiple spindle heads for such operations as drilling, reaming, counterboring and spot facing.

The unit cycle may be initiated electrically or manually. Among the hydraulic features are outside



gasket mounted pump and control valve, closely fitting cylinder assembly that does not require rings or packings, quill sealed against both internal hydraulic drain and external coolant. The hydraulic control valve has a single plunger. Ex-Cell-O Corp.

FOR MORE DATA CIRCLE NO. 17 ON REPLY CARD

#### Time Recorder

. . . audits time record

Payroll time keeping is simplified with the Cincinnati Paymaster, featuring a quick audit time record.

This fully-automatic attendance time recorder is self-regulated every 24 hours and is adaptable to



any payroll time or tabulating card. Electro-mechanical design accommodates any complicated signal and work shift schedules automatically, completely eliminating all manual operations. Cincinnati Time Recorder Co.

FOR MORE DATA CIRCLE NO. 18 ON REPLY CARD

## LITERATURE

### Catalogs and Clip Sheets

Reply card on page 147 will bring you free literature, editorial clips or more information on new products and equipment described or advertised in this issue

#### **Automatic Milling Machines**

Motch & Merryweather Machinery Co.-This company offers a 4-page brochure entitled "Automatic Precision Balancing By Metal Removal." A typical use detailed in this bulletin is the machining of automotive connecting

FOR MORE DATA CIRCLE NO. 19 ON REPLY CARD

#### Stainless Steel Tubing

American Brass Co.-Flexible stainless steel tubing is described in a bulletin released by American Brass. Data on various types of construction, size and weight ranges, burst pressures, bending diameters and fittings available for assemblies are included.

FOR MORE DATA CIRCLE NO. 20 ON REPLY CARD

#### Maximum Use, Minimum Aisle

Chicago Tramrail Corp.-Trak-Rak crane is a top or underrunning crane with a vertical rotating column that incorporates fork truck features. Cranes can be furnished with all motions motorized or in any combination of push or motorized. There is no floor load. Examples of applications in 14 typical jobs, plus engineering and capacity drawings and specifications are available in a 20-page reference book.

FOR MORE DATA CIRCLE NO. 21 ON REPLY CARD

#### The GATX Review

General American Transportation Corp.—A hard-bound 47-page brochure describes and illustrates General American's rail transportation and storage terminal services, and shows how building and maintaining this equipment has led to custom fabricating of an extensive line of other products in many industries. These additional fields include, generally, plate structures, processing machinery, welded vessels, plastic molding and the Kanigen nickel plating process.

FOR MORE DATA CIRCLE NO. 22 ON REPLY CARD

#### Mill Bearings

Link-Belt Co.-Dimensions and load ratings are available on new heavy-duty roller bearings especially designed for severe operating conditions found in steel mills, mines and foundries. These mill bearings incorporate precision Link-Belt self-aligning roller bearings in a rugged steel pillow block housing.

FOR MORE DATA CIRCLE NO. 23 ON REPLY CARD

#### **Plant Facilities**

Champion Forge Co .-- "Presenting an Element That Underlies All Other Elements In Forging" is the title of a new brochure offered by this company. It illustrates Champion's four forging shops under one roof. Quality control's latest methods of chemical analysis and impact testing are depicted. Modern die making equipment, heat treating and cleaning are seen.

FOR MORE DATA CIRCLE NO. 24 ON REPLY CARD

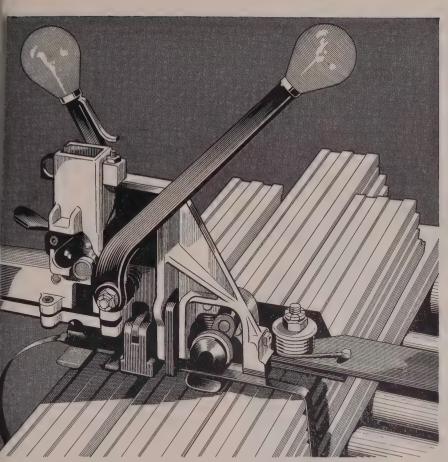
#### **Mounting Pads**

Felters Co.—This company offers a 23-page bulletin entitled "Facts About Anchoring Your Machines with Unisorb." What it is, what it does and how it is installed are covered in illustrations and case histories.

FOR MORE DATA CIRCLE NO. 25 ON REPLY CARD

#### Forming, Stamping, Drawing

Eastern Tool & Mfg. Co.-A 20page catalog titled "Wire Forming, Metal Stamping, Deep Drawing," covers Eastern's extensive



Wherever assemblies must be held together—on metal strappers or dishwashers—more and more original equipment manufacturers and maintenance men are relying on FLEXLOC locknuts for safe, dependable locking.

# Why are more and more FLEXLOC locknuts being used to hold assemblies together?

There are a number of reasons. FLEXLOCS are one piece, all metal—no lockwashers to break, no cotter pins to shear, no auxiliary locking devices to deteriorate. FLEXLOCS stay put wherever you place them—as stop nuts or seated nuts—once their locking threads are fully engaged. Because they won't work loose, they reduce costly service calls. FLEXLOCS have higher tensile, are stronger than most other locknuts. And they withstand temperatures as high as 550°F.

FLEXLOCS have the additional advantage of reusability. They can

be applied again and again without loss of efficiency. Because they are safe and dependable, you'll find more and more FLEXLOCS being used where vibration is severe—on automotive equipment, compressors, machine tools, household appliances, high-speed looms, aircraft.

FLEXLOCS are available in a wide range of sizes in any quantity. Stocks are carried by leading industrial distributors everywhere. Write for literature and samples for test purposes. STANDARD PRESSED STEEL CO.,

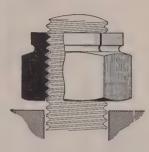
Jenkintown 33, Pa.



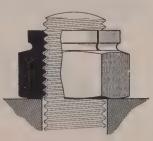
Starting. A FLEXLOC starts like any ordinary nut. Put it on with your fingers. Tighten it with a standard hand or speed wrench.



Beginning to Lock. As the bolt enters the segmented locking section, the section is expanded, and the nut starts to lock.



Fully Locked As a Stop Nut. When 1½ threads of a standard bolt are past the top of the nut, the FLEXLOC is fully locked. A FLEXLOC does not have to seat to lock.



Fully Locked As a Seated Nut. When it is used as a lock or stop nut, the locking threads of the FLEXLOC press inward against the bolt, lifting the nut upward and causing the remaining threads to bear against the lower surface of the bolt threads. Vibration will not loosen a FLEXLOC, yet there is no galling of threads.



LOCKNUT DIVISION

SPS JENKINTOWN PENNSYLVANIA



work in these fields. It shows how the firm's operation is integrated through research and development engineering, tool designing and making, wire forming, metal stamping, deep drawing, assembling, plating and finishing.

FOR MORE DATA CIRCLE NO. 26 ON REPLY CARD

#### **Corrosion Resistant Coating**

Mullins Non-Ferrous Castings Corp.—Carboline Co. Division offers literature that defines serviceability, cost and life of each material in a line of corrosion resisting coatings. It's a reference data sheet for engineers who want to select the correct coating. Practical limitations of each material are made clear by tabulated data.

FOR MORE DATA CIRCLE NO. 27 ON REPLY CARD

#### **Design for Extrusion**

Aluminum Co. of America—Significant facts necessary to design products as impact extrusions are covered in Alcoa's 16-page booklet. Alcoa impacts are one-piece, seamless, semi-hollow or solid parts having forged bases and one or more extruded side walls. Parts may have round, square, rectangular or oblong cross sections with ribbed, beaded or fluted side walls and bases containing bosses, lugs, other projections or recesses.

FOR MORE DATA CIRCLE NO. 28 ON REPLY CARD

#### Handling Know-How

Material Handling Institute Inc.—No. 4 in the library of know-how series on material handling is the 10-page booklet entitled "Organization, The Engineering and Training." Organization principles and rules, material handling functions, engineering, operating and training functions, responsibility and authority are the subjects covered.

FOR MORE DATA CIRCLE NO. 29 ON REPLY CARD

#### **Process Equipment**

Massachusetts

Blaw-Knox Co.—Process Equipment Department offers bulletin No. 2439 describing its line of process equipment. These systems include autoclaves, reaction vessels, electro-vapor heating systems, digesters, contactors, quick-opening doors, agitator assemblies, kettles, package heating and cooling units, pilot plants, vulcanizers,

prompt service on every purchase.

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tuffing boxes, high pressure storge tanks, lead refining kettles nd complete resin plants.

R MORE DATA CIRCLE NO. 30 ON REPLY CARD

#### emperature Regulators

Spence Engineering Co. Inc.—A our page bulletin describes design and operation features of Spence emperature regulators. A large ataway diagram of a typical manine with a description of contruction and parts is included, ith recommended installations of the regulators for instantaneous ater heaters, storage water heaters and forced air heating systems.

R MORE DATA CIRCLE NO. 31 ON REPLY CARD

#### ial Indicators

Nilsson Gage Co. Inc.—A 6age bulletin on the complete line f new Nilcoid dial indicators with filcoid movements and pointerne dials has been issued. Data n Nilcoid movement and the stepown, pointer-line dial are covered empletely in the bulletin. Five models are discussed.

R MORE DATA CIRCLE NO. 32 ON REPLY CARD

#### nloadina Machines

Sahlin Engineering Co.—Sahlin as just issued a 16-page two-color rochure describing and illustrateg various designs of their Iron and automatic unloading manines for presses. Swinging arm and floor-type machines are insuded, as are six designs of speal-purpose gripping jaws.

#### ectrical Conductors

Aluminum Co. of America—Ala has prepared a 20-page review tell some of the things contribed to the electrical industry in a past and some of the things uminum offers for the future.

Detailed text is supported by illustrations. Included is a list of technical reference material available on aluminum conductors.

FOR MORE DATA CIRCLE NO. 34 ON REPLY CARD.

#### **Vertical Milling Machines**

U. S. Machine Tool Co.—Burke Machine Tool Division offers a 4-page bulletin covering their vertical milling machine. Why they consider it the economical answer to accurate, heavy duty vertical milling problems is discussed and specifications are listed.

FOR MORE DATA CIRCLE NO. 35 ON REPLY CARD

#### **Pivot Punches**

Pivot Punch and Die Corp.—A 20-page catalog, showing complete services available to the metal-working industry has been published by Pivot Punch and Die. Facilities for and examples of tools, dies, jigs, fixtures, gages, special machinery, fabrication, machinery repair and rebuilding and parts production are shown.

FOR MORE DATA CIRCLE NO. 36 ON REPLY CARD

#### Self-Propelled Cranes

Thew Shovel Co.—Heavy-duty Moto-Cranes and Self-Propelled cranes in the 524 series are featured in a 2-color, 20-page descriptive catalog. Detailed design and construction views, along with onthe-job photos, highlight the booklet. Sections are devoted to hydraulic coupling power take-off, details of removable counterweight and crane boom features.

#### **Varnish Catalog**

Minnesota Mining & Mfg. Co.— An up-to-date insulating varnish catalog contains a special section entitled "How to Use Insulating Varnishes." Included is general For free literature, editorial clips or more information on products described in this section, circle the corresponding number at left. Fill in box below for articles or advertisements not numbered.

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use information and special instructions on dipping, vacuum, pressure, brush, spray and baking types of application. Charts include conversion tables, solvent charts, tank capacities and specific gravity correction tables.

FOR MORE DATA CIRCLE NO. 38 ON REPLY CARD

#### Stainless Steel Tubing

Helical Tube Corp.—A 4-page brochure is offered covering their line of welded and cold drawn stainless steel tubing, seamless stainless tubing and tubing specialties. Fundamentals of stainless steel are listed.

FOR MORE DATA CIRCLE NO. 39 ON REPLY CARD

#### Electric Cranes

Victor R. Browning & Co. Inc. -A comprehensive 29-page brochure on their electric overhead traveling cranes is offered. Cranes for steel mill, general industrial and cement plant service are covered. Photos, diagrams and specifications are given for each of the types described.

FOR MORE DATA CIRCLE NO. 40 ON REPLY CARD

#### **Metal Hose Products**

Universal Metal Hose Co.-A 20-page catalog, divided in five sections, covers seamless all-metal flexible pressure hose, interlocked asbestos packed high-pressure flexible metal hose, interlocked suction, blower and conveyor hose, square-locked conduits and flexible spout tubing. Specifications and photos of each type are included.

FOR MORE DATA CIRCLE NO. 41 ON REPLY CARD

#### Warm Air Heaters

Dravo Corp.—Bulletin No. 543-B illustrates a line of commercial and industrial, gas fired, warm air unit heaters having output capacities of 88,000 to 160,000 Btu per hour. Two types, one for suspended mounting and one that can be built into duct type heating or air conditioning systems, are covered. Tables list heating and air delivery capacities, outlet temperatures, air pressure drops, weights and dimensions.

FOR MORE DATA CIRCLE NO. 42 ON REPLY CARD

#### Power Unit Manual

Gregory Industries Inc .-- Instructions on how to parallel two units for welding large diameter

studs among important changes incorporated in the revised Nelwelder Power Unit Manual issued by Nelson Stud Welding Division. It contains paralleling diagrams, information on performance possible, models available, power and fuse requirements and general instructions on installation, operation and maintenance.

FOR MORE DATA CIRCLE NO. 43 ON REPLY CARD



#### EDITORIAL REPRINTS:

#### Skilled Labor Tomorrow

Skilled labor shortages are creating minor problems today. Unless the nation's apprentice program is stepped up, that shortage will become more serious soon. STEEL's cover story presents some of the factors involved in the apprentice situation and what some foreward-looking executives are doing about it.

FOR MORE DATA CIRCLE NO. 44 ON REPLY CARD

#### **Machining Titanium**

Titanium works a lot easier than most machining people think. Biggest problem now is short tool life caused by abrasiveness, galling and high tool tip temperatures. This article, on page 96, is adapted from a report prepared by Curtiss-Wright Corp. for the Air Force. FOR MORE DATA CIRCLE NO. 45 ON REPLY CARD

#### **Custom Heat Treating**

This specialized industry has grown tremendously in the past 20 years. Services range from trouble-shooting to providing heattreat facilities for the small plant. STEEL's report, beginning on page 100, shows why both small shops and large companies find it profitable to farm out many heat treating jobs, and describes facilities available.

FOR MORE DATA CIRCLE NO. 46 ON REPLY CARD

#### **Lighting Maintenance**

It's important to see that lighting upkeep is placed on a wellplanned and smartly-executed basis. STEEL's article, on page 114, shows basic procedures, gives tips on methods and equipment. FOR MORE DATA CIRCLE NO. 47 ON REPLY CARD

### Market

STEEL

May 3, 1954

THE downward adjustment in the steel industry has been completed.

Steel sales are no longer dropping. Steel prices, as a whole, are remaining steady. The national steel ingot production rate is holding firmly at the slightly increased level it attained two weeks ago.

Principally responsible for the turn-around is the completion of inventory reductions at many metalworking plants. Looming as stimulants to steel demand are the off-chance of a steelworkers' strike this summer and the explosive international situation in Indo-China. Either of them could catapult a flood of buyers into the market for steel.

STEP-UP— Completion of inventory reductions is not limited to steel consumers. Some steel producers have reached their goal on reduction of stocks of semifinished steel. One Midwest steel producer revealed it had lowered its inventories farther than it had planned to. Now it is sharply boosting its ingot output. One big steelmaker is producing ingots at 90 per cent of capacity and another is running at 100 per cent.

Seven of 13 steelmaking districts in the nation produced ingots above the national rate of 69 per cent of capacity in the week ended yesterday.

Despite the firming-up in steel ingot production at the end of April, that month had the lowest output of the first four months of this year.

**PROMISING**— May holds a promise of improvement in steel output. A survey by STEEL

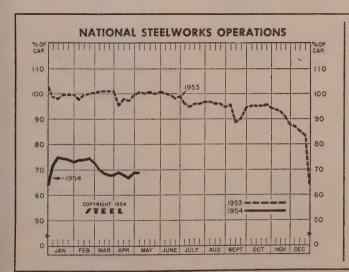
### Outlook

showed consumers expect to take 3.7 per cent more steel that month than in March. This reflects continued completions of steel inventory reductions. Reports on May bookings by some of the steel companies bear this out. Benjamin F. Fairless, chairman, United States Steel Corp., says he not only thinks that his company's business will be as good in the next 90 days as it is now but that it will improve to some extent. "That," he points out, "would take us into the third quarter."

A MAINSTAY—One of the reasons for encouragement is the construction outlook. A good volume of construction work continues to come out, and considerable future work is on the drawing boards. Indicative of the strength of construction, 8.2 per cent of all finished steel shipped by mills this year is structural shapes. In all of last year they totaled only 6.3 per cent. The construction industry is now the mainstay of sales of steel plate.

IN DEMAND—The government program to build bins for surplus grain is giving a fillip to the demand for galvanized steel sheets. Other seasonal upward influences on the galvanized sheet business are requirements for air-conditioning equipment and for farms. Air-conditioning equipment also is a good outlet now for cold-rolled carbon steel sheets.

**PICKING UP**—Producers of cold-finished steel bars note a pickup in demand. Consequently they are turning to producers of hot-rolled bars for increased supplies of raw stock. One cold-drawer reports it is operating a double shift.



#### DISTRICT INGOT RATES (Percentage of capacity engaged)

	k Endea	ł Chan	ge	Same 1953	Week 1952
Pittsburgh	. 70		2*	97	44
Chicago			1*	106.5	50
Mid-Atlantic		-	1	97.5	70
Youngstown	. 70	+	3	106	45
Wheeling	. 86	+	2	101	77
Cleveland	. 77.5	+	2.5*	102.5	44
Buffalo	67.5		0	106.5	35
Birmingham	. 56.5	+	3	102	44
New England	. 60		0	86	35
Cincinnati		_	1	97.5	60
St. Louis	. 72.5	+1	7	92	44.5
Detroit	60.5		0	109	64.5
Western	. 84	+	3	110	82.5
National Pate	60		۵	100.5	52

#### INGOT PRODUCTION\$

We	ek Ended May 2	Week Ago	Month Ago	Year Ago
INDEX (1947-1949=10		101.8	102.6	140.8
NET TONS (In thousands)	1,632†	1,636	1,648	2,262

\*Change from preceding week's revised rate. †Estimated. ;Amer. Iron & Steel Institute. Weekly capacity (net tons): 2,384,549 in 1954; 2,254,459 in 1953; 2,077,040 in 1952.

#### PRICE INDEXES AND COMPOSITES

#### AVERAGE PRICES OF STEEL (Bureau of Labor Statistics) Week Ended Apr. 27

Prices include mill base prices and typical extras and deductions. Units are 100 lb except where otherwise noted in parentheses. For complete description of the following products and extras and deductions applicable to them write to STEEL.

Rails, standard, No. 1			\$8.575	Strip, C.R., stainless, 430 (lb) \$0.415	Tin plate, hot-dipped, 1.25	\$9.433
Rails, light, 40 lb	5.767	Bars, H.R., stainless, 303			Tin plate, electrolytic, 0.25	
Tie Plates		(lb)		Strip, H.R., carbon 2.505		7,133
Axles, railway	7.250	Bars, H.R., carbon	4.873	Pipe, black, buttweld (100	lb	1.100
Wheels, freight car, 33 in.	45 000	Bars, reinforcing	4.900	ft)		6.233
(per wheel)		Bars. C.F., carbon	7.960	Pipe, galv., buttweld (100 ft) 17.731	quality	
Plates, carbon	4.550	Bars, C.F., alloy	11,000		Wire, drawn, carbon	7.713
Structural Shapes	4.367	Bars, C.F., stainless, 302		Fipe, line (100 It) ITL. 500	Wire, drawn, stainless, 430	
Bars, tool steel, carbon (lb)	0,415	(lb)	0.433	Casing, oil well, carbon (100	(lb)	0.545
Bars, tool steel, alloy, oil		Sheets, H.R., carbon		11)	Bale ties (bundle)	5.653
hardening die (1b)	0.505		5.696		Nails, wire, 8d common	7.488
Bars, tool steel, H.R., alloy,		Sheets, C.R., carbon		ft) 214.113	Wire, barbed (80-rod spool)	6.847
high speed W 6.75, Cr 4.5,		Sheets, galvanized	6.895		Woven wire fence (20-rod	
V 2.1, Mo 5.5, C 0.60 (lb)	1.075	Sheets, C.R., stainless, 302		Tubing, mechanical, carbon	roll)	16 174
Bars, tool steel, H.R., alloy,		(lb)	0.548	(100 ft) ‡	1011)	30.211
high speed W 18, Cr 4,		Sheets, electrical	9.000	Tubing, mechanical stain-		
V 1 (lb)	1.550	Strip, C.R., carbon	7.236	less, 304 (100 ft) 161.193	‡ Not available.	

#### FINISHED STEEL PRICE INDEX (Bureau of Labor Statistics)

	Apr. 27	Apr. 20	Month	Apr.
	1954	1954	Ago	Average
(1947-1949=100)	 140.8	140.9	140.9	140.9

#### STEEL'S FINISHED STEEL PRICE INDEX\*

		Apr. 29 1954	Week	Month Ago	Year Ago	5 Yrs. Ago
	av.=100) per lb	189.74	189.74 5.140	189.74 5.140	181.31 4.912	154.01 4.172

#### STEEL'S ARITHMETICAL PRICE COMPOSITES

	Apr. 29	Week	Month	Year	5 Yrs.
	1954	Ago	Ago	Ago	Ago
Finished Steel, NT	\$113.70	\$113.70	\$113.70	\$110.98	\$94.45
No. 2 Fdry, Pig Iron, GT	56.54	56.54	56.54	55,04	46.63
Basic Pig fron GT	56.04	56.04	56.04	54.66	46.10
Malleable Pig Iron, GT	57.27	57.27	57.27	55.77	47.34
Steelmaking Scrap, GT	26.00	26.00	24.50	41.67	23.25
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•For explanation of weighted index see STEEL, Sept. 19, 1 of arithmetical price composite, STEEL, Sept. 1, 1952, p. 130.

#### COMPARISON OF PRICES

Comparative prices by districts, in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

	Apr. 29	Week	Month	Year 5 Yrs.
FINISHED STEEL	1954	Ago	Ago	Ago Ago
Bars, H.R., Pittsburgh	4.15	4.15	4.15	3.95 3.35
Bars, H.R., Chicago	4.15	4.15	4.15	3.95 3.35
Bars, H.R., del. Philadelphia	4.405	4.405	4,405	4.502 3.816
Bars, C.F., Pittsburgh	5.20	5.20	5.20	4.925 3.95
Shapes, Std., Pittsburgh	4.10	4.10	4.10	3.85 3.25
Shapes, Std., Chicago	4.10	4.10	4.10	3.85 3.25
Shapes, del., Philadelphia	4.38	4.38	4.38	4.13 3.492
Plates, Pittsburgh	4.10	4.10	4.10	3.90 3.50
Plates, Chicago	4.10	4.10	4.10	3.90 3.40
Plates, Coatesville, Pa	4.10	4.10	4.10	4.35 3.50
Plates, Sparrows Point, Md	4.10	4.10	4.10	3.90 3.45
Plates, Claymont, Del	4.10	4.10	4.10	4.35 3.65
Sheets, H.R., Pittsburgh	3.925	3.925	3,925	3.775 3.25
Sheets, H.R., Chicago	3.925	3.925	3.925	3.775 3.25
Sheets, C.R., Pittsburgh	4.775	4.775	4.775	4.575 4.00
Sheets, C.R., Chicago	4.775	4.775	4.775	4.575 4.00
Sheets, C.R., Detroit	4.975	4.975	4.975	4.775 4.20
Sheets, Galv., Pittsburgh Strip, H.R., Pitts	5.275	5.275	5.275	5.075 4.40
Strip, H.R., Pitts.	4.425	4.425	4.425	3.975-4.225 3.50
Strip, H.R., Chicago	3.925	3.925	3.925	3.725 3.25
Strip, C.R., Pittsburgh	5.45	5.45	5.45	5.10-5.80 4.375
Strip, C.R., Chicago	5.70	5.70	5.70	5.35 4.00
Strip, C.R., Detroit	5.65	5.65	5.65	5.30-6.05 4.20
Wire, Basic, Pitts	5.525	5.525	5.525	5.225-5.475 4.15
Tin plate (1.50 lb), box, Pitts.	6.55 \$8.95	6.55		6.35 5.15
Im place (1.50 lb), box, Pitts.	<b>\$0.95</b>	\$8.95	\$8.95	\$8.95 \$7.75

Billets, forging, Pitts (NT) \$75.50 \$75.50 \$75.50 \$70.50 \$61.00 Wire rods, \( \frac{7}{4} - \frac{7}{4} \)" Pitts. . . 4.525 4.525 4.525 4.425 3.775

PIG IRON, Gross Ton	1954	Ago	Ago	Ago	Ago
Bessemer, Pitts	\$57.00	\$57.00	\$57.00	\$55.50	\$47.00
Basic, Valley	56.00	56.00	56.00	54.50	46.00
Basic, deld, Phila	59,66	59.66	59.66	59.25	49.39
No. 2 Fdry, Pitts	56.50	56,50	56.50	55.00	46.50
No. 2 Fdry, Chicago	56.50	56.50	56,50	55.00	46.25
No. 2 Fdry, Valley	56.50	56.50	56.50	55.00	46.50
No. 2 Fdry, del. Phila	60.16	60.16	60.16	59.75	49.89
No. 2 Fdry, Birm	52.88	52.88	52.88	51.38	43.38
No. 2 Fdry (Birm.) del, Cin.	60.43	60.43	60.43	58.93	49.43
Malleable, Valley	56.50	56.50	56.50	55.00	46.50
Malleable, Chicago	56.50	56.50	56.50	55.00	46.50
Ferromanganese, Duquesne.	200.00†	200,001	200.00†	228.00*	175.00

\*75-82% Mn. gross ton, Etna, Pa. †74-76% Mn, net ton.

#### SCRAP, Gross Ton (Including broker's commission)

No. 1	Heavy Melt. Pitts	\$26.50	\$26.50	\$25.50	\$43.00	\$24.00
No. 1	Heavy Melt, E. Pa	22.00	22,00	22.00	42.50	22.75
	Heavy Melt, Chicago	29.50	29.50	26.00	39.50	23.00
	Heavy Melt, Valley	28.50	27.50	23.50	43.50	22.00
	Heavy Melt, Cleve	25.50	24.50	20,50	41.25	18.50
	Heavy Melt. Buffalo.	25,50	23.50	24.00	43.50	23.50
	Rerolling, Chicago	39.50	39.50	34,50	51.50	27.75
	Cast, Chicago	38.50	38.50	36.00	42.50	27.50

COKE, Net Ton					
Beehive, Furn, Connisvi		\$14.75	\$14.75	\$14.75	\$14.
Beehive, Fdry, Connlsvl		16.75	16.75	17.00	17.
Oven Fdry, Chicago	24.50	24.50	24.50	24.50	20.

#### NONFERROUS METALS

(cents per pound, carlots, except as otherwise noted)

#### PRIMARY METALS AND ALLOYS

SEMIFINISHED STEEL

Aluminum: 99+%, ingots 21.50, pigs 20.00, 10,000 lb or more, f.o.b, shipping point. Freight allowed on 500 lb or more,

Aluminum Alloy: No. 13, 12% SI, 23.30; No. 13, 5% SI, 23.10; No. 142, 4% Cu, 24.40; No. 195, 4.5% Cu, 0.8% SI, 23.70; No. 214, 3.8% Mg, 24.40; No. 356, 7% SI, 0.3% Mg, 23.20. Antimony: R. M.M. brand, 99.5% 28.50, Lone Star brand, 29.00, f.o.b. Laredo, Texas, in bulk. Foreign brands, 99.5%, 25.50-26.00 New York, duty paid, 10,000 lb or more.

Beryllium: 37%, lump or beads, \$71.50 per lb f.o.b. Cleveland or Reading, Pa.

Beryllium Aluminum: 5% Be, \$72.75 per 1b of contained Be, f.o.b. Reading, Pa.

Beryllium Copper: 3.75-4.25% Be, \$40.00 per lb of contained Be, with balance as Cu at market price on shipment date, f.o.b. Reading, Pa. or Elmore, O.

Bismuth: \$2.25 per lb, ton lots.

Cadmium: Sticks and bars, \$1.70 per lb del. ('ohalt: 97-99%, \$2.60 per lb for 550 lb keg; \$2.62 per lb for 100 lb case; \$2.67 per lb under 100 lb.

Columbium: Powder, \$75.00 per lb, nom. Copper: Electrolytic 30.00 del. Conn. Valley, 30.125 del. Midwest; Lake 30.00 del.; Fire refined 29.75 del.

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Germanium: 99.9%, \$295 per 1b nom. Gold: U. S. Treasury, \$35 per oz.

Indium: 99.9%, \$2.25 per troy oz. Iridium: \$145-\$150 per troy oz.

Lead: Common 13.80, chemical 13.90, corroding 13.90, St. Louis; New York basis, add 0.20.

Lithium: 98%, \$11-\$14 per lb, depending on quantity.

Magnesium: 99.8%, selfpalletizing pig 27.00; notched ingot 27.75, 10,000 lb or more, f.o.b Freeport, Tex. For Port Newark, N. J., and Madison, III., add 1.20 for pig and 1.25 for ingot. Sticks, 1.3 in. diameter, 46.00, 100 to 4999 lb, f.o.b. Madison, III.

Magnesium Alloys: AZ91C and alloys C. H. G and R 32.50; alloy M 34.50, 10.000 lb or more, f.o.b. Freeport, Tex., or Madison, Ill. Add 1.20 for Port Newark, N. J.

1.20 for FORT Newark, N. J.
Mercury: Open market, spot, New York, \$232-\$235 per 76-lb flask.
Molybdenum: Powder 99% hydrogen reduced \$3.40 per lb; pressed ingot \$4.06 per lb; sintered ingot \$5.53 per lb.
Nickel: Electrolytic cathodes, sheets (4 x 4 in. and larger), unpacked 60.00; 25-lb pigs 62.65; "XX" nickel shot 63.65; "F" nickel shot or

DAILY NONFERROUS PRICE RECORD

	Price	Last	Previous			Apr. 1953
	Apr. 29	Change	Price	Mar. Avg.	Feb. Avg.	Avg.
Copper		Apr. 12	29.75-30.00	29.865	29,750	30.755
Lead		Apr. 12	13.55	12.735	12.610	12.473
Zinc	10.25	Mar. 29	9.75	9,657	9.369	11.000
Tin	95.25	Apr. 28	97.00	92.513	85,181	102.567
Nickel	60.00	Jan. 14, 19	953 56.50	60.000	60,000	60,000
Aluminum		July 15, 19	953 20.50	21,500	21.500	20.500
Magnesium .	27.00	Mar. 9, 19	953 24.50	27.000	27.000	27.000

Quotations in cents per pound based on: Copper, del. Conn. Valley; Lead, common grade, del. St. Louis; Zinc, prime western, E. St. Louis; Tin, Straits, del. New York; Nickel, electrolytic cathodes, 99.9%, base size at refinery unpacked; Aluminum, primary ingots, 99 + %, del.; Magnesium 99.8%, Freeport, Tex.

ingots for addition to cast iron, 60.00; prices f.o.b. Port Colborne, Ont., including import duty. New York basis, add 0.92.

Osmium: \$140-\$150 per troy oz nom.

Palladium: \$21 per troy oz.

Platinum: \$84-\$87 per troy oz from refineries. Radium: \$16-\$21.50 per mg radium content, depending on quantity.

Rhodium: \$125 per troy oz. Ruthenium: \$70-\$75 per troy oz.

Selenium: 99.5%, \$5-\$6 per lb. Sodium: 16.50, carlots: 17.00 1.c.1.

Tantalum: Sheet, rod \$39.00 per lb; powder \$33.50 per 1b

Tellurium: \$1.75 per lb.

Thallium: \$12.50 per lb.

Tin: Straits, New York, spot, 95.25 prompt, 95.25

Titanium: Sponge, 99.3+%, grade A-1 ductile (0.3% Fe max.) \$4.72; grade A-2 (0.5% Fe max.) \$4.46 per pound.

Tungsten: Powder, 98.8%, carbon reduced, 1000 lb lots \$4.85 per lb f.o.b. shipping point; less than 1000 lb \$4.80; 99+% hydrogen reduced, \$4.95. Treated ingots \$6.70.

Zine: Prime Western 10.25, brass special 10.50, intermediate 10.75, E. St. Louis, freight allowed over 0.50 per pound. High grade 11.60, special high grade 11.75, die casting alloyingot 14.25, del.

Zirconlum: Sponge \$10 per lb; powder electronics grade \$15, flash grade \$11.50. (Note: Chromium, manganese and silicon metals are listed in ferroalloy section.)

SECONDARY METALS AND ALLOYS
Aluminum Ingot: Piston Alloys 21.00-22.50;
No. 12 foundry alloy (No. 2 grade) 20.0021.00, 5% silicon alloy, 0.60 Cu max., 22.50-23.50; 13 alloy, 0.60 Cu max., 22.50-23.50; 13s alloy, 0.60 Cu max., 22.50-23.50; 195 alloy 21.75-22.75; 108 alloy 20.50-21.50 steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 21.00-22.00; grade 2, 20.00-21.00; grade 3, 13.50-19.50; grade 4, 18.00-19.00;

Brass Ingot: Red brass, No. 115, 26.00; tin bronze No. 225, 38.50, No. 245, 32.25; high-leaded tin bronze, No. 305, 31.00; No. 1 yellow, No. 405, 22.25; manganese bronze No. yellow, No. 421, 26.75.

Magnesium Alloy Ingot: AZ63A, 31.50; AZ91B, 27.00; AZ91C, 31.50; AZ92A, 31.50.

#### NONFERROUS MILL PRODUCTS

COPPER WIRE

Bare, soft, f.o.b. eastern mills, 100,000 lb lots, 35.36; 30,000 lb lots, 35.48; l.c.l. 35.98. Weatherproof, 100,000 lb, 36.28; 30,000 lb, 36.53; l.c. 37.03. Magnet wire del., 15,000 lb or more 41.83; l.c.l. 42.58.

LEAD
(Prices to jobbers f.o.b. Buffalo, Cleveland, Pittsburgh.) Sheets, full rolls, 140 sq ft or more \$19.00 per cwt; pipe, full coils \$19.00 per cwt; traps and bends, list prices plus 30%.

TITANIUM (Prices pur 30%. TITANIUM)
(Prices per lb, 100,000 lb and over, f.o.b. mill.)
Sheets, \$15; sheared mill plate, \$12; strip, \$15; wire, \$11; forging billets, \$6; hot-rolled and forged bars, \$6.

Sheets 23.00, f.o.b. mill, 36,000 lb and over. Ribbon zinc in coils, 19.50-20.50, f.o.b. mill, 36,000 lb and over. Plates 49.00-22.25.

ZIRCONIUM
Plate \$27; H.R. strip \$28; C.R. strip \$35; forged or H.R. bars \$27; wire, 0.015 in., 1 NICKEL.

	NIC		MONEI		
		"A,	" Nickel	Monel	Inconel
Sheet,	C.R.		86.5	67.5	92.5
Strip,	C.R.		92.5	70.5	98.5
Plate, 1	H.R.		84.5	66.5	90.5
Rod, S	hapes		82.5	65.5	88.5
Seamle:	ss Tul	es :	115.5	100.5	137.5
Shot, E	Blocks			60.0	

(30,000 lb base; freight allowed over 499 lb)
Sheets and Circles: 28 and 38 mill finish c.l.
Thickness Widths or Colled Range Inches Diameters, In., Inc 12-49 Sheet\* Sheet Circlet 0.249-0.138 0.245-0.100 12-49 12-48 12-48 12-48 33.9 34.4 35.1 35.7 0.135-0.096 0.095-0.077 0.076-0.061 32.9 33.2 33.6 37.7 38.1 38.4 0.060-0.048 12-48 12-48 0.037-0.030 12-48 37.0 34 0 30 1 12-48 12-48 12-36 12-36 0.029-0.024 39.6 34.3 35.1 0.018-0.017 0.016-0.015 0.013-0.012 12-24 38 2 44 8 12-24 12-24 12-24 12-24 12-24 12-18 38.2 39.4 40.5 41.9 0.010-0.0095 48 0 45.6 47.1 48.6 50.0 51.8 0.009-0.0085 0.008-0.0075 0.008 12-18 50.2

\* 72-180 in. lengths. † 26 in. max. dia.

ALUMINUM
Plates and Circles: Thickness 0.250-3.0 in.,
24-60 in, width or dia., 72-240 in, lengths.
Alloy Plate Base Circle Base Alloy Plat 2S-F, 3S-F ...... 50S-F ..... 36.3 2S-F, 3S-F 32.4 50S-F 33.5 4S-F 34.5 52S-F 36.2 618-T6 37.4 24S-T4\* 39.3 755.T4\* 47.1 40.9 55-14\* ...... 47.1 53.7 24-48 in. widths or dia. 72-180 in. lengths.

ALUMINUM

Screw Machin	e Stock:	5000 lb	and over.	
Dia. (in.) or			Hexa	
across flats	11S-T3	17S-T4	11S-T3	17S-T4
Drawn				
0.125	59.6	57.9		
0.156-0.172	50.6	48.9		
0.188	50.6	48,9		62.4
0.219-0.234	47.9	46.2		
0.250-0.281	47.9	46.2		59.5
0.313	47.9	46.2		<b>56</b> .8
Cold-finished				
0.375-0.531	46.6	44.9	56.2	53.4
0.563-0.688	46.6	44.9	53.4	50.2
0.750-1.000	45.5	43.8	48.9	47.3
1,063	45.5	43.8		45.7
1.125-1.500	43.8	42.1	47.3	45.7
Rolled				
1.563	42.7	41.0		
1.625-2.000	42.1	40.4		44.1
2.125-2.500	41.1	39.4		
2.750-3.375	39.9	38.2		

Forging Stock: Round, Class 1, 43.8-34.4, in specific lengths 36-144 in. diameters 0.375-8 in.; rectangles and squares. Class 1, 50.2-38.4 in random lengths 0.375-4.0 in. thick, widths 0.750-10.0 in.

Pipe: A.S.A. Schedule 40, alloy 638-T6, 20 ft length, plain ends, 90,000 lb base, per 100 ft.

Nom mine

size, in.		size, in.	
3/4	\$15.05	2	\$ 46.30
1 1	23.65	4	127.70
11/4	32.00	6	228.50
11/2	38.25	8	343.80

MAGNESIUM

MAGNESIUM
34.00, 0.064-in. 73.00, 0.125-in. 60.00, 30,000
ib and over, f.o.b. mill.
Plate: Hot-rolled AZ31, 53.000, 20.000 ib or
more 0.250-in. and over, widths to 48 in.,
lengths to 144 in.; raised pattern floor plate,
59.00, 20,000 ib or more, %-in. thick, widths
24-72 in., lengths 60-192 in.
Extrusion Stock: AZ31, Exctangles, ¼ x 2 in.
69.20, 1 x 4 in. 63.00. Rod, 1 in. 66.00, 2 in.
62.50. Tubing, 1 in. OD x 0.065-in. 67.00.
Angles, 1 x 1 x ½-in. 72.90, 2 x 2 x ½-in.
67.00. Channels, 5 in. 67.80. I-Beams, 5 in.

BRASS MILL PRICES		MILL I	PRODUC	TS a	SCRAP	ALLOWA	NCES f
	Sheet, Strip, Plate 48.38b 41.72 45.44	Rod 45.98c 33.50d 45.38	Wire 42.26 45.98	Seamless Tube 48,44 44.63 48.25	Clean Heavy 26.000 19.750 23.000	Rod Ends 26,000 19,500 22,750	Clean Turnings 25,250 18,000 22,250
Low Brass, 80%	44.47 45.76	44.41 40.07	45.01 52.80	47,28 48.92	22.125 18.250 23.875	21.875 18.000 23.625	21,375 17,500 23,125
Nickel Silver, 10%	46.95 55,36 66.58	46.89 59.43g 67.08	47.49 57.69 67.08	49.51 68.23	23.625 26.125	23.375 25.875	11.813 24.875
Silicon Bronze	52.71 49.48 43.98	51.90 43.62 39.77	52.75 54.06	70.11e	25.125 18.250 18.625	24.875 18.000 18.375	24.125 17.500 17.875

a. Cents per lb, f.o.b, mill; freight allowed on 500 lb or more, b. Hot-rolled, c. Cold-drawn. d. Free cutting. e. 3% silicon, f. Prices in cents per lb for less than 20,000 pounds, f.o.b, shipping point. On lots over 20,000 lb at one time, of any or all kinds of scrap, add 1 cent per lb. g. Leaded.

#### NONFERROUS SCRAP

DEALERS' BUYING PRICES (Cents per pound, New York, in ton lots)

Aluminum: 28 clippings 13.00; low copper clippings 13.00; mixed clippings 11.00-12.00; old sheet 10.50-11.00; borings and turnings 7.00; pistons and struts 7.00; crankcases 10.00-11.00; industrial castings 10.00-11.00.

11.00; industrial castings 10.00-11.00.

Copper and Brass: Heavy copper and wire, No. 1 24.50; No. 2 copper 23.00; light copper 21.00; No. 1 composition red brass 18.50; No. 1 composition turnings 18.00; mixed brass turnings 13.00; new brass clippings 18.00; No. 1 brass rod turnings 14.00; light brass 12.00; heavy yellow brass 14.00; new brass rod ends 15.00; auto radiators, unsweated 14.00; cocks and faucets 16.00; brass pipe 17.00.

Lead: Heavy 10.75-11.25; battery plate 5.75-6.25; linkotype and stereotype 13.00; electrotype 11.25; mixed babbitt 12.75. light cop. 18.50; No. brass

Magnesium: Clippings 18.50-19.50; clean castings 17.50-18.50; iron castings, not over 10% removable Fe, 16.50-17.50.

Monel: Clippings 24.00-26.00; old sheet 22.00-24.00; turnings 16.00-18.00; rods 23.00-25.00. Nickel: Sheets and clips 60.00-65.00; rolled anodes 60.00-65.00; turnings 40.00; rod ends 60.00-65.00.

57.00-50.00; Tin: No. 1 pewter 55.00-60.00; block tin pipe 75.00-80.00; No. 1 babbitt 45.00-50.00. Zinc: Old zinc, 4.50; new die cast scrap, 4.00; old die cast scrap, 3.50.

#### REFINERS' RUVING PRICES

(Cents per pound, carlots, delivered refinery) (Cents per pound, cariots, delivered rennery). Aluminum: 28, 38 clippings 15.50-16.00; 518, 528 clippings 15.50-16.00; 148, 178, 248 clippings 14.50-15.00; mixed clippings 14.50-15.00; old sheet 13.00-13.50; old cast 13.00-13.50; clean old cable, free of steel 15.50-16.00; borings and turnings 13.00-14.00.

Beryllium Copper: Heavy scrap, 0.020-in. and heavier, not less than 1.5% Be, 42.00; light scrap 37.00.

Copper, Brass: No. 1 copper 26.75-27.00; 2 copper 25.25-25.50; light copper 23.75-2 refinery brass (60% copper) per dry content 22.25-22.50; auto radiators, 16.25.

#### INGOTMAKERS' BUYING PRICES (Cents per pound, carlots, delivered)

Copper, Brass: No. 1 copper 26.75-27.00; No. 2 copper 25.25-25.50; light copper 23.75-24.00; No. 1 composition borings 19.50-20.00; No. 1 composition solids 20.00-20.50; heavy yellow brass solids 15.50-16.00; yellow brass turnings 14.75-15.00; radiators 16.50.

#### PLATING MATERIALS

(F.o.b. shipping points, freight allowed on quantities) ANODES

Cadmium: Special or patented shapes \$1.75

Copper: Flat-rolled 45.04, oval 44.54, 2000-5000 lb; electrodeposited 39.78, cast 42.04, 5000-10,000 lb lots.

Nickel: Depolarized, less than 500 lb 92.00; 500-4999 lb 88.00; over 5000 lb 86.00.

Tin: Bar or slab, less than 200 lb \$1.165; 200-499 lb \$1.15; 500-999 lb \$1.145; 1000 lb or more \$1.14.

Zine: Bar 18.50, bar or flat top 17.50, ton

#### CHEMICALS

Cadmium Oxide: \$2.15 per lb, in 100 lb drums. Chromic Acid: Less than 10,000 lb 28.50; over 10,000 lb 27.50.

Copper Cyanide: Under 1000 lb 63.90, 1000 lb

Copper Cyanide: Under 1000 lb 63.90, 1000 lb and over 61.90.

Copper Sulphate: 100-6000 lb 11.35; 8000-12,000 lb 11.10; 12.000-24,000 lb 10.85; 24,000-36,000 lb 10.61; 38,000 lb and over 10.35.

Nickel Chioride: 100 lb 45.00; 200 lb 43.00; 300 lb 42.00; 400-4900 lb 40.00; 5000-9900 lb 38,00; 10,000 lb and over 37.00.

Nickel Sulphate: 100 lb 37.00; 200 lb 35.00; 300 lb 34.00; 400-4900 lb 32.00; 5000-35,000 lb 30.00; 36,000 lb and over 27.00.

Silver Cyanide: Cents per ounce, 16 oz 80.625; 100 oz 78.50; 25,000 oz and over 77.325.

Sodium Cyanide: Egg, under 1000 lb 19.80; 1000-19,900 lb 18.80; 20,000 lb and over 17.80; % granular, add 1-cent premium to above.

Sodium Stannate: Less than 100 lb 73.5; 100-600 lb 59.1; 700-1900 lb 56.6; 2000-9900 lb 54.8; 10,000 lb or more 53.7.

Stannous Chioride (Anhydrous): Less than 50 lb \$1.60; 50 lb \$1.28; 100-300 lb \$1.11; 400-

Stannous Chloride (Anhydrous): Less than 50 lb \$1,40; 50 lb \$1,26; 100-300 lb \$1.11; 400-900 lb \$1,08; 100-1900 lb \$1,08; 200-4900 lb \$1,025; 5000-19,000 lb 96.4; 20,000 lb and over

Stannous Sulphate: Less than 50 lb \$1.298; 50 lb 99.8; 100-1900 lb 97.8; 2000 lb and over 95.8

Zine Cyanide: Under 1000 lb 54.30, 1000 lb. and over 52.30.

### Nonferrous Metals

Nickel producers are looking ahead to the day when they will be seeking business. They're very conscious of the present problems of their civilian customers

"CUSTOMERS WANTED" signs are being lettered by nickel producers.

That may seem anomalous to purchasing agents who've seen no respite in their quest for the vital metal. They claim rations for civilian use are little above a survival level and that second quarter shows no improvement.

The Long Pull—Producers of the metal naturally want to encourage this civilian use. It's their bread-and-butter market. Thinking ahead to return of nickel normalcy, producers have very much in mind the present problems of their customers. They're also looking for new outlets in the future.

Listen to this appraisal by Dr. John F. Thompson, chairman, International Nickel Co. of Canada Ltd., in his message to company shareholders last week in Toronto: "Considerable new nickel production capacity will have been established during the next few years and this may well prove to be temporarily in excess of market demand."

Other Competition—Noting that "nickel is in world-wide competition with other steel alloying elements and with a wide variety of other metals such as copper, zinc and tin," Dr. Thompson expressed the hope that "other producers and those newly coming into the field will feel, as we do, that production carries with it the responsibility for developing and expanding the market for nickel.

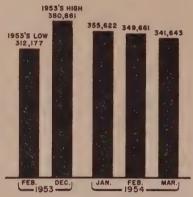
"Supply remaining for civilian purposes after providing for these heavy and abnormal demands (defense and stockpile) has been found to be definitely inadequate," continued Dr. Thompson. "As a consequence, the period of restriction of peacetime uses for nickel is being prolonged to the detriment of civilian markets." Nickel price has held at 60 cents for 15 months and is unlikely to change soon, according to these statements: "It is important that the price remain stable for some period of time, resisting pressures in either direction" and "Price of nickel should at all times reflect not only shortterm but also long-term considera-

Uses—Two-thirds of the free world's nickel supply last year came to the U. S., with the steel industry again the largest consumer. Some 45 million pounds of nickel went in-

to the record tonnage of stainless and heat-resisting steels produced here. While over the years there has been a reduction in amount of nickel used per ton of steel made, there has been greater over-all use of alloyed steels, and many of the lower nickelcontaining steel compositions have developed uses and fields of their own

#### SHRINKING

Fabricators Refined Stocks of Copper (Tons of 2000 pounds)



Source: Copper Institute

which were previously not economically open to steels with higher alloys content.

Other applications Inco counts on for increased nickel consumption include plating, nonferrous alloys, nickel-chromium alloys for jet engines, electrical and electronics industries, cast irons, and in atomic energy plants for concentration and processing of atomic fuels. Inco thinks there will be plenty of nickel for the job. Its reserves both in tonnage of ore and of contained nickel are highest in the company's history.

#### "Imported from Canada"

Canadian aluminum will be found in more and more U. S. metalworking products. Well over one million tons are either contracted for or firmly offered fabricators between now and the end of 1958. Cinching this probability was a court order allowing Alcoa to continue its purchase of 600,000 tons of Canadian

metal from Aluminum Import Corp. over a six-year period commencing in 1953. The Justice department, which sought to stop the deal, in effect is bowing out as gracefully as possible. Informed observers also see the order as putting the ax to whatever faint hope was left for a thirdround domestic aluminum expansion program.

Aluminum Import's announced proposal to make available 110,000 tons of aluminum yearly to nonintegrated U. S. users will have priority over deliveries to Alcoa (and presumably to Kaiser, whose contract with Import was not challenged by the government). From the Alcoa tonnage, Olin Industries Inc. is entitled to 40,-000 tons of primary pig or ingot each year through 1957 and 20,000 tons during 1958. Should Olin build a primary smelter, it may cancel its option on 15 months' notice. Alcoa is allowed to buy 50,000 tons of additional Canadian aluminum vearly upon 15 days' notice to the government. The court order, incidentally, was entered exactly 17 years from the date of first antitrust filing against Alcoa. While Alcoa notes it "has not enjoyed the experience of protracted litigation," it feels the results achieved "have in many ways been constructive."

#### The Customers Are There

Magnesium men are finding surprising strength in their industry as their doorknob pulling sales campaign finds new customers. Castings men are still down at the mouth, but wrought product fabricators find a lot to be cheerful about. Statistics show March shipments of wrought products up 22 per cent from February to 645 tons, the fourth consecutive monthly increase. First-quarter totals were off 9 per cent from the fourth quarter of last year because of a poor January. Primary output in March, 6545 tons, was highest in eight months, and first quarter total of 18,847 tons was less than 1 per cent below 1953's fourth quarter.

#### **Market Memos**

• Merry-go-round on copper scrap prices is giving custom smelters, ingotmakers and exporters a fast whirl. The half-cent increase last week has the smelters against the wall. With No. 1 copper scrap as high as 27 cents and their processing costs about 3 cents or more, they can't afford another round.

Newport Steel HELPS KEEP YOUR INVENTORY DOWN



Flexibility in operation enables<sup>a</sup> Newport Steel to adjust their schedules and complete your order when you want it, always strictly according to your specifications. From the heart of America's greatest industrial growth, Newport makes fast, economical delivery, too, by rail, barge or truck. You thus avoid the expense of heavy inventories while ensuring the continuity of your production and obtaining the high quality for which Newport has been famous for 69 years.

#### PRODUCTS OF NEWPORT STEEL

Hot-Rolled Steel in Coil
Hot-Rolled Pickled Steel in Coil
Electric Weld Line Pipe
Hot-Rolled Sheets
Galvanized Sheets
Colorbond Sheets
Hot-Rolled Pickled Sheets
Electrical Sheets
Roofing and Siding
Eave Trough and Conductor Pipe
Culverts



#### ECONOMICAL WATERAIL DELIVERY

Newport Steel is situated on the Mississippi-Chio River system and the great Cincinnati rail hub. With the advantage of location, new river barge facilities and seven major railroads, Newport gives economical, dependable delivery to industrial areas throughout the Middle West

Newporteel Steel

NEWPORT, KENTUCKY

#### STEEL PRICES

Mill prices as reported to STEEL, cents per pound except as otherwise noted. Changes shown in italics. Code numbers following mill points indicate producing company; key on page 155. Key to footnotes, page 157.

SEMIFINISHED	So. Chicago, Ill. R24.525	LoneStar, Tex. L64.40 Minnequa, Colo. C104.95	Bethlenem.Pa. BZ4.010	Carnegie, Pa. C126.325 Chicago W186.325 Cleveland A7, C206.325
iNGOTS, Carbon Forging (NT) Fontana, Calif. K1 \$86.00 Munhall, Pa. U559.00	SparrowsPoint,Md. B24.625 Sterling.Ill.(1) N154.525	Munhall, Pa. U54.10 Pittsburgh J54.10	Canton.O. R2, T74.875	Detroit R76.425 Detroit P176.475
	Struthers, O. Y14.525 Torrance, Calif. C115.325	Riverdale, Ill. A14.10 Seattle B35.00	Clairton, Pa. U54.875	Detroit B5
INGOTS, Alloy (NT) Detroit R7\$63.00 Fontana, Calif. K188.00	Worcester, Mass. A74.825	Sharon, Pa. S34.10 So. Chicago, Ill. U5, W14.4.10 Sparrows Point, Md. B24.10	Ecorse, Mich. G5 5.025 Fairless, Pa. U5 5.025 Fontana, Calif. K1 5.925 Gary, Ind. U5 4.875 Houston S5 5.275	Donora, Pa. A76.325 Elyria, O. W86.325 Gary, Ind. R26.325
Fontana, Calif. K188.00 Midland, Pa. C1862.00	STRUCTURALS	SparrowsPoint, Md. B24.10 Steubenville, O. W104.10	Fontana, Calif. K15.925 Gary Ind U54.875	Hammond, Ind. L2, M13.6.325
Munhall, Pa. U562.00	Carbon Steel Stand. Shapes AlabamaCity, Ala. R24.10	Warren, O. R24.10 Weirton, W. Va. W64.10	Houston S55.275 Ind. Harbor, Ind. I-2, Y1.4.875	Hartford, Conn. R26.775 Harvey, Ill. B56.325 Lackawanna, N.Y. B26.325
BILLETS, BLOOMS & SLABS Carbon Rerolling (NT)	Aliquippa, Pa. J54.10 Bessemer, Ala. T24.10 Bethlehem, Pa. B24.15	Youngstown R2, U5, Y1.4.10	Johnstown, Pa. B24.875 Kansas City, Mo. S55.475	Mansfield Mass B5 6.775
Aliquinna Pa J5 \$62.00	Clairton Pa II54.10	PLATES, Carbon Abras. Resist. Fontana, Calif. K15.90	Lackawanna, N.Y. B24.875	Massillon, O. R2, R86.325 Midland, Pa. C186.325
Bessemer, Pa. U5	Fairfield, Ala. T24.10 Fontana, Calif. K14.75	Geneva, Utah C115.25	LosAngeles B35.925 Massillon,O. R24.875 Midland,Pa. C184.875	Monaca Pa S176.325
Fairfield, Ala. T262.00	Gary, Ind. U54.10 Geneva, Utah C114.10	PLATES, Wrought Iron Economy, Pa. B149.30	So. Chicago R2, U5, W14 .4.875	Newark, N.J. W186.65 Plymouth, Mich. P56.525 So. Chicago, Ill. R2, W14.6.325
Fontana, Calif, K1	Houston S54.50 Ind.Harbor,Ind, I-24.10	PLATES. High-Strength Low-Alloy	So. Duquesne, Pa. U54.875 Struthers, O. Y14.875	SpringCity,Pa. K36.50 Struthers,O. Y16.325 Warren,O. C176.325
Lackawanna, N.Y. B262.00	Johnstown, Pa, B24.15 Kansas City, Mo. S54.70	Aliquippa, Pa. J5 6.25 Bessemer, Ala, T2 6.25 Clairton, Pa. U5 6.25	Warren, O. C174.875 Youngstown U54.875	Warren, O. C176.325 Waukegan, Ill. A76.325
Munhall, Pa. U562.00 So. Chicago, Ill. U562.00	Lackawanna, N.Y. B24.15 Los Angeles B34.80	Cleveland J56.25 Conshohocken,Pa, A36.25	BARS & SMALL SHAPES, H.R.	Worcester, Mass. A76.625 Youngstown F3, Y16.325
So.Duquesne, Pa. U562.00	Minnequa. Colo. C104.55	Ecorse, Mich. G5	High-Strength Low-Alloy Aliquippa, Pa. J56.225 Bessemer, Ala, T26.225	
Carbon, Forging (NT) Aliquippa, Pa. J5\$75.50	Munhall, Pa. U5 4.10 Niles, Calif. P1 4.80	Fontana, Calif. (30) K1 6.95		BARS, Reinforcing (Fabricators) AlabamaCity, Ala, R24.15
Aliquippa, Pa. J5\$75.50 Bessemer, Pa. U575.50 Buffalo R275.50	Phoenixville, Pa. P44.15 Seattle B34.85	Gary, Ind. U56.25 Geneva, Utah C116.25	Clairton, Pa. U5 6.225 Ecorse, Mich. G5 6.375 Fairfield, Ala. T2 6.225	Atlanta A114.35 Birmingham, Ala C154.15
Buffalo R2	So. Chicago, Ill. U5, W14.4.10 So. San Francisco B34.75	Ind. Harbor, Ind. I-26.25 Ind. Harbor, Ind. Y16.75	Fairfield, Ala. T26.225 Fontana, Calif. K17.475	Buffalo R24.15 Cleveland R24.15
Conshohocken.Pa. As XII 5II	Torrance, Calif. C114.80 Weirton, W. Va. W64.10	Johnstown, Pa. B26.25 Lackawanna, N.Y. B26.25	Gary, Ind. U56.225 Ind. Harb., Ind. Y16.725	Emeryville, Calif. J74.90 Fairfield, Ala. T24.15
Detroit R7	Wide Flange	Munhall, Pa. U56.25 Pittsburgh J56.25	Ind.Harb.,Ind. I-26.225 Johnstown,Pa. B26.225	Fontana Calif. K14.85
Fontana, Calif. K1 83.50 Gary, Ind. U575.50	Bethlehem, Pa. B2 4.15 Clairton, Pa. U5 4.10 Fontana, Calif. K1 5.10	Seattle B37.15 Sharon, Pa. S36.25	Lackawanna, N.Y. B26.225	Gary, Ind. U54.15 Houston S54.55
Geneva, Utah C1175.50	Lackawanna, N. Y. B2 4.15	So. Chicago, Ill U5, W14.6.25 SparrowsPoint, Md. B26.25	LosAngeles B36.925 Pittsburgh J56.225	Ind. Harbor, Ind. I-2, Y1.4.15
Houston S5	Munhall, Pa. U5	Youngstown U56.25 Youngstown Y16.75	Seattle B36.975 So.Chicago W146.225	Johnstown, Pa. B24.15 KansasCity, Mo. S54.75 Lackawanna, N.Y. B24.15
Losangeles B385.00		PLATES, Alloy Claymont, Del. C225.55	So. Duquesne, Pa. U5 6.225 So. San Francisco B3 6.975	Los Angeles B34.85 Milton, Pa. M184.15
Munhall, Pa. U575.50 Seattle B389.00	Alloy Stand. Shapes Clairton, Pa. U55.00	Coatesville.Pa. L75.55	Struthers, O. Y16.725 Youngstown U56.225	Minnequa, Colo. C104.75 Niles, Calif. P14.85
So. Chicago R2, U5, W14 75.50 So. Duquesne, Pa. U5 75.50	Fontana, Calif. Kil6.40 Gary, Ind. U55.00	Fontana, Calif. K16.60 Gary, Ind. U55.55	BAR SIZE ANGLES;H.R.CARBON	Pittsburg, Calif. C114.85
So. SanFrancisco B385.00	Gary, Ind. U5	Johnstown, Pa. B25.55 Munhall, Pa. U55.55	Bethlehem, Pa. B24.35 BAR SIZE ANGLES: S. Shapes	Pittsburgh J54.15 SandSprings,Okla. S55.00
Alloy, Forging (NT) Bethlehem, Pa. B2\$82.00	HS I A Stand Shanes	Sharon, Pa. S35.55 So. Chicago, Ill. U5, W14.5.55	Aliquippa, Pa. J54.15	Seattle B3, N14, P23,4.90 So.Chicago,Ill. R24.15
Buffalo R282.00 Canton, O. R2, T782.00	Aliquippa, Pa. J56.175 Bessemer, Ala. T26.175	SparrowsPoint,Md. B2 5.55 FLOOR PLATES	Atlanta A11	So. Duquesne, Pa. U54.15 So. San Francisco B34.90
Detroit R7 84 00	Bethlehem, Pa. B26.20 Clairton, Pa. U56.175	Cleveland J55.15 Conshohocken, Pa. A35.15	BAR SHAPES. Hot-Rolled Allov	SparrowsPoint, Md. B24.15 Sterling, Ill. (1) N15 4.15
Gary.Ind. U5 82.00	Fontana, Calif. K16.825	Harrisburg, Pa. C55.15 Ind. Harbor, Ind. I-25.15	Clairton, Pa. U55.00 Fontana, Calif. K15.925	Torrance Calif. C114.85
Ind Herber Ind VI	Gary, Ind. U56.175 Geneva, Utah C116.175	Munhall, Pa. U55.15 So. Chicago, Ill. U55.15	Cary Ind II5	Youngstown R2, U54.15  BARS, Reinforcing
Johnstown, Pa. B282.00 Lackawanna, N.Y. B282.00	ing Harpor ind 1-2 6 175	PLATES, Ingot Iron	Houston S5 5.60 KansasCity S5 5.60 Youngstown U5 5.00	(Enhvicated: to consumers)
Los Angeles B3 102 00	Ind.Harbor,Ind. Y16.675 Johnstown,Pa. B26.20 Lackawanna,N.Y. B26.20	Ashland c.l. (15) A104.35 Ashland l.c.l (15) A104.85	BARS, Cold-Finished Carbon	Johnstown, 4-1" B25.55 KansasCity S56.35 LosAngeles B35.80
Massillon, O. R2 82.00 Midland, Pa. C18 82.00 Munhall, Pa. U5 82.00	Munhall Pa II5 6 175	Cleveland, c.1. R24.70 Warren,O. c.1. R24.70	Ambridge, Pa. W185.20 Beaver Falls, Pa. M12, R2.5.20	Marion, O. P115.55 Seattle N145.80
So. Chicago R2, U5, W14.82.00 So. Duquesne, Pa 115 82.00	So Chicago III II5 W14 & 175	BARS	Buffalo B5	Seattle B3, P235.85 So.SanFrancisco B35.85
Struthers, O. Y182.00 Warren, O. C1782.00	So. SanFrancisco B36.80 Struthers, O. Y16.675	BARS, Hot-Rolled Carbon	Clare and Da C12 520	SparrowsPt. 1/2-1" B2 5.55
BOUNDS CEASURES COME	H.S., L.A. Wide Flange	Aliquippa, Pa. J54.15	Chicago W18	Williamsport, Pa. S195.45 RAIL STEEL BARS
ROUNDS, SEAMLESS TUBE (NT) Buffalo R2\$92.50 Canton,O. R292.50 Cleveland R292.50 Fontana,Calif. K113.50 Garv Ind US	H.S., LA. Wide Flange Bethlehem, Pa. B2 6.20 Lackawanna, N. Y. B2 6.20 Munhall, Pa. U5 6.125 So. Chicago, Ill. U5 6.125	Alton, Ill. L1	Donors Pa A7 5 20	Avis, Pa. (3) J84.25 ChicagoHts. (3) C2, I-24.05
Cleveland R292.50	Munhall, Pa. U56.125 So. Chicago, Ill. U56.125		Elyria, O. W85.20 Franklin Park, Ill. N55.20	ChicagoHts. (4) C2, I-24.15 Ft. Worth. Tex. (26) T44.65
	PILING	Clairton, Pa. U54.15	Gary, Ind. R25.20	Franklin, Pa. (3) F54.05
Massillon,O. R2	Bearing Piles	Detroit R74.30	Hammond, Ind. L2, M13.5.20 Hartford, Conn. R2	Marion, O. (3) P114.00 Moline, Ill. (3) R24.15
SHEET BAR (NT)	So.Chicago, Ill. U54.10	Emeryville, Calif. J74.90 Enirfield Ala T2 4 15	Harvey,Ill, B55.20	Tonawanda (3,4) B124.15 Williamsport Pa. (3) S19.4.25
Fontana, Calif. K1 \$93.18	STEEL SHEET PILING Ind. Harbor, Ind. I-24.925	Fairless, Pa. U54.30 Fontana, Calif. K14.85	Los Angeles R2, S306.65 Mansfield, Mass. B55.75 Massillon, O. R2, R85.20	Williamsport, Pa. (4) S19.5.45
SKELP Aliquippa, Pa. J53.85	Munhall, Pa. U54.925	Gary, Ind. U54.15	Monaca, Pa. S175.20 Newark, N.J. W185.65	BARS, Wrought from Economy, Pa. (S.R.) B14 10.40 Economy, Pa. (D.R.) B14 12.90
Munhall.Pa. U5 375	So. Chicago, III. U54.925	Houston S54.55 Ind. Harbor, Ind. I-2, Y1.4.15	NewCastle, Pa. (17) B4 .5.20	Economy (Staybolt) B14 13.20
Warren,O. R23.75 Youngstown R2, U53.75	PLATES PLATES, Carbon Steel	Johnstown, Pa. B24.15 KansasCity, Mo. S54.75	Pittsburgh J55.20 Plymouth, Mich. P55.45 Putnam, Conn. W185.75	McK.Rks.(S.R.) L510.40 McK.Rks.(D.R.) L514.00 McK.Rks(Staybolt) L5.15.50
WIRE RODS AlabamaCity, Ala. R2 4.525	AlabamaCity, Ala. R24.10 Aliquippa, Pa. J54.10	Lackawanna, N.Y. B24.15	Readville, Mass. C145.75	
		Milton.Pa. M184.15	St. Louis, Mo. M55.50 So. Chicago, Ill. W145.20 SpringCity, Pa. K35.65	SHEETS SHEETS, Hot-Rolled Steel
Buffalo W124.525 Cleveland A7	Clairton, Pa. U54.10	Niles Calif P1 4 25	Struthers, O. Y15.20	(18 gage and heavier) AlabamaCity, Ala. R23.925
Alton, III. L1 4.70 Buffalo W12 4.525 Cleveland A7 4.525 Donora, Pa. A7 4.525 Fairfield, Ala, T2 4.525 Fontana Calif K1 5.525	Claymont, Del. C22 4.10 Cleveland J5, R2 4.10 Coatesville, Pa. L7 4.10	N.Tonawanda, N.Y. B11.4.15 Pittsburg, Calif. C114.85 Pittsburgh J54.15	Struthers, O. Y1 5.20 Waukegan, Ill. A7 5.20 Worcester, Mass, W19 6.10 Youngstown F3, Y1 5.20	Allenport, Pa. P73.925 Ashland, Ky. (8) A103.925
		Portland, Oreg. 044.90	BARC Cald Clatabad Allan	Cleveland J5, R23.925 Conshohocken Pa A3 3.975
Houston S5	Ecorse, Mich. G5 4.25 Fairfield, Ala, T24.10 Fontana, Calif. (30) K1 4.75	Seattle B3, N14, P23 4.90 So.Chicago U5, W14 4.15 Chicago(31) R2 4.22 So.Duquesne, Pa. U5 4.15	BARS, Cold-Finished Alloy (Turned and Ground) Cumberland, Md. (5) C19.4.45	Detroit M1 4.075  Ecorse Mich. G5 4.075  Fairfield Ala. T2 3.925
			PARE Call First 1 All	Fairfield, Ala. T23.925 Fairless, Pa. U53.975
Kokomo, Ind. C16 4.625 Los Angeles B3 5.325 Minnequa, Colo. C10 4.775	Geneva, Utah C114.10 GraniteCity, Ill. G44.30 Harrisburg, Pa. C54.10	Sterling, Ill. (1) N154.15	BARS, Cold-Finished Alloy Ambridge, Pa. W186.325	Fontana, Calif. K14.70 Gary, Ind. U53.925
No Tongwanda N V D11 4 595	Houston S54.50		BeaverFalls, Pa. M126.325 Bethlehem, Pa. B26.325	Geneva. Utah Cl14.025
Pittsburg, Calif C115.175	Johnstown, Pa. B24.10	Youngstown U54.15	Buffalo B5	GraniteCity, Ill. G44.125 Ind. Harbor, Ind. I-2, Y1.3.925
Portsmouth P124.525	Lackawanna, N.Y. B24.10	Youngstown(31) R24.20	Canton, O. R2, T76.325	Irvin,Pa. U53.925

				MARKET PRICES
Kokomo, Ind. C16	AlabamaCity, Ala, R2 . 5.275 Ashland, Ky (8) Al 0 . 5.275 Canton, O. R2 . 5.275 Delphos, O. N16 . 5.275 Delphos, O. N16 . 5.275 Fairfield, Ala. T2 . 5.275 Gary, Ind. U5 . 5.275 Gary, Ind. U5 . 5.275 GraniteCity, III. G4 . 5.475 Ind. Harbor, Ind. I - 2 . 5.275 Irvin, Pa. U5 . 5.275 Irvin, Pa. U5 . 5.275 MartinsFerry, O. W10 . 5.275 Miles, O. N12 . 5.275 Pittsburg, Califf. C11 . 6.275 SparrowsPoint, Md. B2.5.275 Steubenville, O. W10 . 5.275 Torrance, Califf. C11 . 6.275 Weirton, W. Va. W6 . 5.275  † Based on 5c zinc  SHEETS, Golvanized No. 10 High-Strength Low-Alloy, 1 vin, Pa. U5 . 7.925	Seattle N14	Warren, O. R2	Worcester, Mass. A76.30 Youngstown C8, Y15.45  STRIP, Cold-Rolled Alloy Steel Carnegle, Pa. S1812.00 Cleveland A712.00 Dover, O. G612.00 Fontana, Calif. Kil13.65 Harrison, N. J. C1812.00 Pawtucket, R. I. (11) NS. 12.15 Pawtucket, R. I. (11) NS. 12.15 Pawtucket, R. I. (12) NS. 12.45 Sharon, Pa. S312.00 Worcester, Mass. A712.30 Worcester, Mass. A712.30 Voungstown C812.00  STRIP, Cold-Rolled High-Strength Low-Alloy Cleveland J57.80 Cleveland A78.15 Dearborn, Mich. D37.90 Dover, O. G68.00 Ecorse, Mich. G58.30 Lackawanna, N. Y. B28.15 Pittsburgh J57.80 Sharon, Pa. S37.65 Sharon, Pa. S37.80 Sharon, Pa. S37.80 Sharon, Pa. S37.85 Sharono, Pa. S37.85
SHEETS, H.R. (14 gg. heavier) High-Strength Low-Alloy Cleveland J5, R2	SparrowsPoint (39) B28.075  SHEETS, Galvanized Ingot Iron No. 10 flat Ashland, Ky. (8) A105.25 Canton, O. R2	STRIP, Hot-Rolled High-Strength Low-Alloy Bessemer, Ala. T2 . 5.95 Conshohocken, Pa. A3 . 5.90 Ecorse, Mich. G5 . 6.10 Fairfield, Ala. T2 . 5.95 Fontana, Calif. K1 . 7.05 Gary, Ind. U5 . 5.95 Ind. Harbor, Ind. I-2 . 5.95 Ind. Harbor, Ind. Y-1 . 6.45 Lackawanna, N.Y. B2 . 6.00 LosAngeles (25) B3 . 6.70 Seattle (25) B3 . 6.70 Seattle (25) B3 . 5.95 So. SanFrancisco (25) B3.6.70 SparrowsPoint, Md. B2 . 6.00	Middletown, O. A10 . 5.45 NewBedford, Mass, R10. 6.00 NewBedford, Mass, R10. 6.00 NewBedford, Mass, R10. 6.00 NewBedford, Mass, R10. 6.00 NewHaven, Conn. D2 . 5.90 Pawtucket, R.I., N8, R3. 6.10 Pittsburgh J5 . 5.45 Riverdale, III. A1 . 5.70 Rome, N.Y. (32) R6 . 5.45 SparrowsPoint, Md. B2 . 5.45 SparrowsPoint, Md. B2 . 5.45 Trenton, N.J. R5 . 7.00 Wall'ford, Conn. W2 . 5.90 Warren, O. (40) T5 . 5.45 Warren, O. 89, R2 . 5.45 Weirton, W. Va. W6 . 5.45	SparrowsPoint, Md.   B2.8.15
SHEFTS, Hot-Rolled Ingot Iron (18 Gace and Henvier)   Ashland Ky. (3)   A10   4.175   Cleveland R2   A10   4.175   Cleveland R2   A10   4.175   Cleveland R2   A10   4.175   Cleveland R2   A175   Warren, O. R2   4.525   Ind.Harbor, Ind. I-2   4.175   Warren, O. R2   4.525   Sharrows Politic Residual R2   A175   Residual R	Cleveland R2 (28) .6.125 Niles, O. R2 (28) .6.125 Weirton, W. Va. W6 .5.975 SHEETS, ALUMINIZED Butler, Pa. A10 .8.625 SHEETS, Enameling Iron Ashland, Ky. (8) A10 .5.175 Cleveland R2 .5.175 Gary, Ind. U5 .5.175 GraniteCity, Ill. G4 .5.375 Ind. Harbor, Ind. I-2 .5.175 Irvin, Pa. U5 .5.175 Middletown, O. A10 .5.175 Niles, O. N12 .6.525 Youngstown Y1 .5.175 BLUED STOCK, 29 ga. Follansbee, W. Va. F4 .7.30 Follansbee, W. Va. F4 .7.30 Follansbee (23) F4 .7.175 Yorkville, O. W10 .7.20 SHEETS, Long Terne Steel (Commercial Quality) BeechBott'm, W. Va. W10 5.675 Mandfield, O. E6 .5.675 Middletown, O. A10 .5.675 Niles, O. N12 .5.675 Middletown, O. A10 .5.675 Niles, O. N12 .5.675 Middletown, O. A10 .5.675 Niles, O. N12 .5.675 Middletown, O. A10 .5.675 SHEETS, Long Terne, Ingot Iron Middletown, O. A10 .6.075 SHEETS, Well Casing Fontana, Calif., K1 .6.20  STRIP  STRIP, Hot-Rolled Carbon Ala, City, Ala, (27) R2 .3.925 Allenport, Pa. P7 .3.925 Allenport, Pa. P7 .3.925 Allenport, Conn. (10) S15 .3.95 Bridgeport, Conn. (10) S1	A1 Acme Steel Co. A3 Alan Wood Steel Co. A4 Allegheny Ludium Steel A5 Alloy Metal Wire Co. A7 American Steel & Wire A8 Anchor Drawn Steel Co. A9 Angell Nail & Chapiet A10 Armco Steel Corp. A11 Atlantic Steel Co. B1 Babcock & Wilcox Co. B2 Bethlehem Steel Co. B2 Bethlehem Steel Co. B3 Beth Pac. Coast Steel B4 Blair Strip Steel Co. B5 Blass & Laughlin Inc. B5 Braeburn Alloy Steel B6 Brainard Steel Div. Sharon Steel Corp. B10 E & C. Brooke, Wick-wire Spencer Div., Colo. Fuel & Iron B11 Buffalo Bolt Co., Div., Buffalo-Eclipse Corp. B12 Buffalo Steel Div. H. K. Porter Co. B14 A. M. Byers Co. B15 J. Bishop & Co. C1 Calstrip Steel Corp. C2 Calumet Steel Div., Borg-Warner Corp. C4 Carpenter Steel Co. C5 Central Iron & Steel Div. Barium Steel Corp. C7 Cleve. Cold Rolling Mills C8 Cold Metal Products Co. C9 Colonial Steel Co. C10 Colorado Fuel & Iron C11 Columbia Steel Shaft. C13 Columbia Tool Steel Co. C14 Compressed Steel Shaft. C15 Connors Steel Div. H. K. Porter Co. Inc. C16 Continental Steel Co. C19 Cumbrian Steel Co. C20 Cuyahoga Steel & Wire C22 Claymont Steel Forducts C24 G, O, Carlson Inc. D2 Detroit Tube & Steel D4 Disston & Sons, Henry D6 Driver Harris Co. D7 Dickson Weatherproof Nail Co. D8 Damascus Tube Co. D9 Wilbur B, Driver Co. E1 Eastern Stainless Steel E1 Electro Metallurgical Co. E5 Elliott Bros. Steel Co. E5 Elliott Bros. Steel Co. E6 Empire Steel Corp. E7 Firth Sterling Inc. F7 Fitzsimons Steel Co.	H1 Hanna Furnace Corp. H7 Helical Tube Co. 1-1 Igoe Bros. Inc. 1-2 Inland Steel Co. 1-3 Interlake Iron Corp. 1-4 Ingersoil Steel Div., Borg-Warner Corp. 1-7 Indiana Steel & Wire Co. J3 Jessop Steel Co. J4 Johnson Steel & Wire Co. J5 Jessop Steel Co. J6 Josep Steel Co. J7 Jones & Laughin Steel J7 Josep Steel Co. J8 Jessop Steel Corp. J8 Jersey Shore Steel Corp. J8 Jersey Shore Steel Corp. J8 Jersey Shore Steel Corp. L9 Keokuk Electro-Metals K3 Keystone Drawn Steel K4 Keystone Drawn Steel K6 Keystone Drawn Steel K7 Kenmore Metals Corp. L1 Laclede Steel Co. L2 Lasalle Steel Co. L2 Lasalle Steel Co. L2 Latrobe Steel Co. L5 Lockhart Iron & Steel L6 Lone Star Steel Co. L7 Lukens Steel Co. L7 Lukens Steel Co. L7 Lukens Steel Co. L7 Lukens Steel Co. L8 Medart Co. M6 McLouth Steel Corp. M8 Mid-States Steel & Wire M7 Metal Forming Corp. M8 Mid-States Steel & Wire M17 Metal Forming Corp. M18 Milton Steel Products M19 Metal Forming Corp. M18 Milton Steel Products M18 Milton Steel Products M18 Milton Steel Products M19 Metal Forming Corp. M18 Milton Steel Products M18 Milton Steel Products M18 Milton Steel Products M18 Milton Steel Corp. M19 Newport Steel Corp. M19 Newport Steel Corp. M10 Northwestern S.&W. Co. M10 New Delphos Mfg. Co. M10 Oliver Iron & Steel Corp. M11 Pacific States Steel Corp. M12 Pacific States Steel Corp. M19 Pacific States Steel Corp. M19 Pacific States Steel Corp.	Amer, Chain & Cable P17 Plymouth Steel Co, P20 Prod. Steel Strip Corp. P23 Pacific Steel Rolling R1 Reeves Steel & Mfg. Co. R2 Republic Steel Rolling R1 Reeves Steel & Mfg. Co. R2 Republic Steel Corp. R3 Rhode Island Steel Corp. R6 Rome Strip Steel Co. R7 Rotary Electric Steel Co. R7 Rotary Electric Steel Co. R7 RollanceDiv., EstatomMfg. R9 Rome Mfg. Co. R10 Rodney Metals Inc. S1 Seneca Wire & Mfg. Co. S3 Sharon Tube Co. S5 Shefield Steel Corp. S6 Shanon Steel Corp. S6 Shenango Furnace Co. S7 Simonds Saw & Steel Co. S13 Standard Forgings Corp. S14 Standard Frobe Co. S15 Stanley Works S16 Struthers Iron & Steel S17 Superior Drawn Steel Co. S18 Superior Steel Corp. S19 Sweet's Steel Co. S20 Southern States Steel S25 Stainless Welded Products S26 Specialty Wire Co. Inc. S30 Sierra Drawn Steel Corp. Tenn, Coal & Iron Div. Tann, Prod. & Chem. T Texas Steel Co. T5 Thomas Strip Division, Pitisburch Steel Co. T5 Thomas Strip Division,

Bristol, Conn. W1	Anquippa, Pa. 355.25 Alton, III. Li5.70 Atlanta Al15.725 Bartonville, III. & 5.725 Bartonville, III. & 5.725 Buffalo W125.525 Cleveland A7, C20, R2 5.525 Cleveland A7, C20, R2 5.525 Cleveland A7, C20, R2 5.525 Cleveland A7, 5.525 Duluth, Minn. A75.525 Duluth, Minn. A75.525 Duluth, Minn. A75.525 Fairfield, Ala. T25.25 Fostoria, O. (24) S15.75 Houston S55.25 Jacksonville, Fla. M86.05 Johnstown, Pa. B25.25 Joshatown, W. S55.25 Jollet, III. A75.525 KansasCity, M0. S56.125 Kokomo, Ind. C165.625 LosAngeles B36.475 Minnequa, Colo. C105.775 Monessen, Pa. P75.525 Danner, Mass. W125.25 Palmer, Mass. W125.25 So. SanFrancisco C106.475 Portsmouth, O. P125.25 So. SanFrancisco C10475 ExparrowsPoint, Md. B25.25 Sterling, III. (1) N155.25 Struthers, O. Y15.25 Wurke, M8 Spring, High Carbon Aliquippa, Pa. J56.925 Atlon, III. L17.10 Bartonville, III. K45.25 Wurke, M8 Spring, High Carbon Aliquippa, Pa. A75.25 Worcester, Mass. A75.25 Worcester, Mass. A75.25 Duluth, Minn. A79.25 Johnstown, Pa. B29.25 Johnstown, Pa. B29.25 Johnstown, Pa. B29.25 Worcester A77.25 Wurke, Upholstery Spring Aliquippa, Pa. J56.925 Worcester A77.25 Wurke, Upholstery Spring Aliquippa, Pa. J56.25 Wirk, Upholstery Spring Aliquippa, Pa. J56.25 Johnstown, Pa. B26.25 Douluth, Minn. A77.25 Wurke, Upholstery Spring Aliquippa, Pa. J56.25 Johnstown, Pa. B26.25 Douluth, Minn. A76.25 Duluth, Minn. A76.25 Douluth, Minn. A76.25 Duluth, Minn. A76.25 Douluth, Minn. A76.	Alton, III. 11 9.45 Bartonville, III. 64 9.35 Euffalo W12 9.35 Fostoria, O. S1 9.35 Johnstown, Pa. B2 9.35 Monessen, Pa. P7, P16 9.35 Monessen, Pa. P7, P16 9.35 Muncie, Ind. I-7 9.55 Palmer, Mass. W12 9.65 Portsmouth, O. P12 9.35 Roebling, N. J. R5 9.65 SparrowsPt. B2 9.45 Struthers, O. Y1 9.35 Worcester J4, T6 9.65 (A) Plow and Mild Plow; add 0.25c for improved plow. Wire, Tire Bead Alton, III. 11 12.75 Bartonville, III. K4 12.65 Monessen, Pa. P16 12.55 Roebling, N. J. R5 12.85 Wire, Cold-Rolled Flat Anderson, Ind. G6 7.45 Euffalo W12 7.45 Cleveland A7 7.45 Cleveland A7 7.45 Crawfordsville, Ind. M8 7.55 Dover, O. G6 7.45 Fostoria, O. S1 7.45 Kokomo, Ind. C16 7.55 Franklin-Park, III. T6 7.60 Massillon, O. R3 7.45 Fostoria, O. S1 7.75 Worcester A7, T6, W12 7.75 Wire, Merchant Quality (6 to 8 gage) An'id, Golv. Ala.City R2 6.675 7.075* Aliquippa J5 6.675 7.075* Aliquippa J5 6.675 7.075* Cleveland A7 7.675 Crawfordsville, IM 87 7.30 Bartonville (48) K4 6.775 7.30 Donora, Pa. A7. 6.675 7.075† Houston, Tex. S5. 7.075 7.475 Johnstown B2 (48) 6.675 7.075† Houston, Tex. S5. 7.075 7.475 Johnstown B2 (48) 6.675 7.075† KansasCity, M. S5. 7.75 Kokomo C16 6.75 7.075† KansasCity, M. S5. 7.75 Kokomo C16 7.7675 7.30 Forthmouth, O. P12.6.675 7.075† KansasCity, M. S5. 7.75 Kokomo C16 6.75 7.075† KansasCity, M. S5. 7.75 Kokomo C16 7.75 7.75 Kokomo C16 7.75 7.75 KansasCity, M. S5. 7.75 Kansas C17 6.75 7.75 Kansas C17	SparrowsPoint, Md. B2 . 151 Sterling, Ill. (1) N15 . 149 WIRE, Barbed Col. AlabamaCity R2 . 153** Aliquippa J5 . 150** Atlanta Al1
BeechBottom, W. Va. W10 11.60 12.15 12.65 13.65 Brackenridge, Pa. A4 11.60 Newport, Ky. N9 11.60 Vandergrift, Pa. U5 11.60 12.15 12.65 13.65 Zanesville, O. A10 11.60 12.15 12.65 13.65 C.R. COILS & CUT LENGTHS 12.62 A10 16.25 16.75 12.35 Warren, O. R2 13.65 16.25 16.75 12.35 Warren, O. R2 12.55 Newsprocessed 1 Fully processed only. £ Coils an-	Trenton, N. J. A7	Portsmouth, O.P.12. 6.675	Duluth, Minn. A7 Fairfield, Ala. T2 131 Galveston, Tex. D7 139 Houston, Tex. D5 139 Johnstown, Pa. B2 131 Jollet, Ill. A7 131 KansasCity, Mo. S5 143 Kokomo, Ind. C16 133 Minnequa, Colo. C10 136 Monessen, Pa. P7 131 Pittsburg, Calif. C11 150 Rankin, Pa. A7 131 SparrowsPt. Md. B2 133 Sterling, Ill. (1) N15 131 Worcester, Mass. A7 137 NAILS, CUI (100 b keg) To dealers (33) Conshohocken, Pa. A3 137 NAILS, CUI (100 b keg) To dealers (33) Conshohocken, Pa. A3 137 NAILS, CUI (100 b keg) To dealers (33) Conshohocken, Pa. A3 137 NAILS, CUI (100 b keg) To dealers (33) Conshohocken, Pa. A3 137 NAILS, CUI (100 b keg) To dealers (33) Conshohocken, Pa. A3 137 NAILS, CUI (100 b keg) To dealers (33) Conshohocken, Pa. A3 137 NAILS, CUI (100 b keg) To dealers (33) Conshohocken, Pa. A3 137 NAILS, CUI (100 b keg) To dealers (33) Conshohocken, Pa. A3 137 NAILS, CUI (100 b keg) To dealers (33) Conshohocken, Pa. A3 137 NAILS, CUI (100 b keg) To dealers (33) Conshohocken, Pa. A3 137 NAILS, CUI (100 b keg) To dealers (33) Conshohocken, Pa. A3 138 A1 (101 N 15 131 NOTOCESTOR TO A1 131 NOTOCESTOR TO A1 131 NOTOCESTOR TO A1 132 NOTOCESTOR TO A1 133 NOTOCESTOR TO A1 134 Nonessen, Pa. P7 133 Pittsburg, Calif. C11 152 Rankin, Pa. A7 133 Nonessen, Pa. P7 134 Nonessen, Pa. P7 135 Nonessen, Pa. P7 136 Nonessen, Pa. P7 137 Nonessen, Pa. P7 138 Nonessen, Pa. P7 139 N

Ambridge, Pa. N. 24, 25 (1). 15.75 19.75 22.25 23.75 6.5 23.75 6.5 23 5.75 25.5 8  Ambridge, Pa. N. 24 (1). 15.75 19.75 22.25 23.75 23.75 23 23.75 25.5 25.	
Aliquippa, Pa. J5 (‡). 15.75 list 19.75 2.5 22.25 5 23.75 6.5 23.75 6.5 23 5.75 25.5 8  Ambridge, Pa. N2 (†). 15.75 19.75 22.25 23.75 23.75 6.5 23 5.75 25.5 8  Ambridge, Pa. N2 (†). 15.75 19.75 22.25 23.75 23.75 23 5.75 25.5 8  Ambridge, Pa. N2 (†). 15.75 19.75 22.25 23.75 23.75 23 5.75 25.5 8  Ambridge, Pa. N2 (†). 15.75 19.75 22.25 23.75 23.75 23 5.75 25.5 8  Ambridge, Pa. N2 (†). 15.75 19.75 22.25 23.75 23.75 23 5.75 25.5 8  Ambridge, Pa. N2 (†). 15.75 19.75 22.25 8 22.25 8 23.75 9.5 23.75 9.5 23 8.75 25.5 12  BLECTRIC WELD STANDARD PIPE, Threaded and Coupled Youngstown R2 (**) 15.75 1.5 19.75 3.5 22.25 6.0 23.75 7.5 23.75 7.5 23 7.5 25.5 6  BUTTWELD STANDARD PIPE, Threaded and Coupled Size—Inches 15.75 1.5 19.75 3.5 22.25 6.0 23.75 7.5 23.75 7.5 23 7.5 25.5 6  BUTTWELD STANDARD PIPE, Threaded and Coupled Size—Inches 15.75 1.5 19.75 3.5 22.25 6.0 23.75 7.5 23.75 7.5 23 7.5 25.5 6  BUTTWELD STANDARD PIPE, Threaded and Coupled Size—Inches 15.75 1.5 19.75 3.5 22.25 6.0 23.75 7.5 23.75 7.5 23 7.5 25.5 6  BUTTWELD STANDARD PIPE, Threaded and Coupled Size—Inches 15.75 1.5 19.75 3.5 22.25 6.0 23.75 7.5 23.75 7.5 23 7.5 25.5 6  BUTTWELD STANDARD PIPE, Threaded and Coupled Size—Inches 15.75 1.5 19.75 3.5 22.25 6.0 23.75 7.5 23.75 7.5 23.75 7.5 23 7.5 25.5 6  BUTTWELD STANDARD PIPE, Threaded and Coupled Size—Inches 15.75 1.5 19.75 2.5 22.25 6.0 23.75 7.5 23.75 7.5 23.75 7.5 23 7.5 25.5 6  Carload discounts from list, %  Youngstown II, 15.75 1.5 11.5 11.5 11.5 11.5 11.5 11.5	
ELECTRIC WELD STANDARD PIPE, Threaded and Coupled Youngstown R2 (**) 15.75 1.5 19.75 3.5 22.25 6.0 23.75 7.5 23.75 7.5 23 7.5 25.5 6  BUTTWELD STANDARD PIPE, Threaded and Coupled Size—Inches	8.25 1.25 8.25
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	6.75
Aliquippa, Pa, J5 (‡)	
Samon Pa. Md   Samo	0.25 7.5 1.0 9.5
Size-Inches   2   2   2   3   3   3   3   3   3   3	3.00 2.50 6.50
Galvanized pipe discounts based on zinc price of: (†), 14c; (†), 11c to under 12c; (*), 5c; (§), 10c to under 11c; (††), 10.50c-11.50c; (**), 9.50c; with discounts adjusted on price of zinc at time of shipment.  Aluminum:  Atomized, 500 lb	8.00
BOLLER TUBES   Net base c.l. prices, dollar per 100 ft, mill; minimum   Mainthickness, cut lengths 10 to 24 ft, inclusive.   C.D.   H.R.	50° 50° 50° 50° 50° 50° 1.00
RAILWAY MATERIALS  Std. Tee Roils  Plow  P	2.00 9.50
RAILS No. 1 No. 2 No. 2 No. 2 Under Sieigh Shoe 12 Respect, Ala T2 4.25 4.25 5.20 Fairfield, Ala T2 5.20 Fairfield	00\$ 5** 3.50 3.50 50* 1.00 50* 75‡
Fairfield, Ala. T2 5.125 Fairfield, Ala. T2 7.05 Gary, Ind. U5 5.125 Ind. Harbor, Ind. I-2, Y17.05 Ind. Harbor, Ind. I-2, Y17.05 Ind. Harbor, Ind. I-2, S.125 KansasCity, Mo. S5 7.30 Lackawanna, N.Y. B2 5.125 Lebanon, Pa. B2 7.05 Minnequa, Colo. C10 5.125 Minnequa, Colo. C10 5.125 Pittsburgh J5 7.05 Seattle B3 5.275 Seattle B3 7.05 S	5.10 3.50 De-
The Cleveland R2	. &

#### STAINLESS STEEL MILL PRICES

(Representative prices cents per pound; subject to current lists of extras)

AISI	Rerolling	Rerolling Slabs,	Forging	Seamless Tube	H.R.	Shapes; H.R. & C.F.			C.R. Strip
Туре	Ingots	Billets	Billets	Billets	Strip	Bars; Wire	Plates	Sheets	Flat Wir
301		20.50	29.50	34.25	29.75	35.25	37.25	46.25	38,25
302		22.75	29.75	34.50	32.00	35.50	37.50	46.50	41.50
302B .		24.50	30.50	34.50	35.00	35.50	37.50	48.75	44.75
303		24.75	32.25	37.25	36.75	38,25	39.75	48.75	45.50
304	18.25	23.75	31.00	36.00	34.25	37.25	39.75	48.75	43.75
304L			36.75			42.75	45.25	54.25	49.00
306	19.50	25.50		36,25	37.00	37.50	42.00	51.75	46.75
308	19.75	26.25	35.25	40.75	38.00	42.00	46.00	55.25	48.00
309		34.75	43.25	49.25	49.25	50.50	53.75	63,50	62.00
309S	28.50	37.50	47.50	54.50	54,00	55.50	59.00	68.50	68.50
310	33.00	43.25	56.75	66.25	67,50	67.50	69.00	72.25	78.75
314							69.00	74.50	
316	28.00	36.25	46.75	54.50	55.00	55.50	59.00	64.50	66.50
316L .			52.50			61.00	64.25	70.00	72.00
317		43.50	58.25	66.75	67,50	68.25	70.75	77,00	79.25
318	33.50	44.00	55.25	64.50	66.25	65.50	68.75	78.00	80.25
321	22.75	29.50	35.25	40.75	42,00	42.00	46.00	55.50	54.50
330			58.00			68,50	70.00	73.75	77.75
347	24.50	32.25	39.50	45.75	46.50	46.75	51.25	60.75	59.25
403			27.00	30.75		32.00	34.25	44.00	41.25
405		21.75	25.25	29.25	30.50	30.25	31.75	42.50	39.75
410	14.00	18.25	24.00	27.75	26.25	28.75	30.00	40.75	34.25
416			24.50	28.25		29.25	30.50	41.25	41.25
420		28.50	29.25	34.00	35.50	35.00	38.50	49.25	52.75
430	14.25	18.50	24.50	28.25	27.00	29.25	30.50	43.50	34.75
430F .		18.75	25.00	28.75		29.75	31.00	44,00	44.00
431		28.50	25.00	28.25	27.50	29.25	30.50	44.00	35.25
440A,B,		28.50	29.25	34.00		35.00	38.50	49.25	52.75
442			28.00			30.50	35.25	48.25	47.75
			33.75	38.25	53.00	39.50	40.75	59.75	71,00
501			14.00	14.50	21.25	16.00	18.25	30.50	29.00
502			15.25	16.00	22.25	17.00	20.00	31.75	30.00

#### CLAD STEEL

		-Plates	Sheets			
Claddina		bon Base	Carbon Base Copper Base			
Stainless	10%	20%	20% Both Side			
		31.00	31.00 77.00			
302	27.60	32.50-32.70	32.50 77.00			
304	36.50	41.00	144.00			
310	32.60	37.70-42.75	42.75			
316		42.20	22.10			
318	37.00		37.00 111.00			
321	29.80	34.40-37.00	40.50 130.00			
347	30.40	35.50-40.50	40.50 150.00			
405	23.40	30.60				
410	22.90	30.10				
430	22.90	30.10	****			
Inconel	41.23	54.18	165.00			
Nickel	37.50	50.90				
Monel	38.90	51.80				
Copper*			46.00			
			arbon Base			
		Cold-Rolled	Hot-Rolled-			
	10%	Both Sides	10% Both Side			

\* Deoxidized. Production points: Stainless sheets, New Castle, Ind. I-4; stainless-clad plates, Claymont, Del. C22, Coatesville, Pa. L7, New Castle, Ind. I-4 and Washington, Pa. J3; nickel, inconel, monel-clad plates, Coatesville L7; copper-clad strip, Carnegie, Pa. S18. Production point for copper-base sheets is Carnegie, Pa. A13.

24 00 32,25

#### TOOL STEEL

Copper\* ..

Regular Ca	\$ per lb Carbon 0.25 rbon 0.30	Grade \$ per lb 5% Cr Hot Work 0.39 W-Cr Hot Work 0.41
Special (	Carbon 0.355 ening 0.37390	V-Cr Hot Work 0.4243 Hi-Carbon-Cr 0.66570

	Grade by	Analysis			# D
l w	Cr	V	Co	Mo	\$ per lb
20.25	4.25	1.6	12.25		3.875
18.25		1	4.75		2.160-2.320
18	4	$\hat{2}$	9		2.515
18	4	2			1.640
18	4	1			1.480
13.5	4	3			1.735
6.4	4.5	1.9		5	1.005-1.055
6	4	3		6	1.240
2	1.4	1.2			0.495
1.5	4	1		8.5	0.865-0.895
	ol Ctool n	modulopra	include:	A4 AR	B2, B8, C4, C9,
C13,	C18, D4,	F2, J3,	L3, M14,	S8, U4	, V2 and V3.

PIG IRON F.o.b. furnace prices in dollars per gross ton, as reported to Steel. Minimum delivered prices are approximate and do not include 3% federal tax.

		No. 2	Malle-	Besse-
Birmingham District	Basic	Foundry	able	mer
AlabamaCity R2	52.38	52.88		
Birmingham R2	52.38	52.88		
Birmingham U6		52.88		
Woodward, Ala. W15	52.38	52 88	56.50†	
Cincinnati, del	1111	60.43	****	
Buffalo District	w o o o	w o w o		
Buffalo R2, H1	56.00	56.50	57.00	
Tonawanda, N.Y. W12	56.00	56.50	57.00	
No. Tonawanda, N.Y. T9	00.00	56.50	57.00	
Boston, del	66.65	67.15	67.65	
Surrouge M W del	59.02	59.52	60.02	
Syracuse, N.Y., del	60.12	60.62	61.12	
Chicago District				
Chicago I-3	56.00	56.50	56.50	57.00
Gary, Ind. U5	56.00		56.50	
IndianaHarbor, Ind. I-2	56.00		56.50	
So.Chicago, Ill. W14, Y1	56.00	56.50	56.50	
So. Chicago, Ill. U5	56.00		56.50	57.00
Milwaukee, del	58.17	58.67	58.67	59.17
Muskegon, Mich., del		62.80	62.80	
Cleveland District				
Cleveland A7	56.00	56.50	56.50	57.00
Cleveland R2	56.00	56.50	56.50	
Akron, O., del. from Cleve.		59.25		E0.75
Lorain, O. N3	58.75 56.00		59.25	59.75
Morally, O. No	56.00			57.00
Mid-Atlantic District				
Bethlehem, Pa. B2	58.00	58.50	59.00	59.50
NewYork, del		62.28	62.78	
Newark, del	61.02	61.52	62.02	62.52
Birdsboro, Pa. B10	58.00	58.50		
Steelton, Pa. B2	58.00	58.50	59.00	59.50
Swedeland, Pa. A3	58.00	58.50	59.00	59.50
Philadelphia, del	59.66	60.16	60.66	61.16
Troy, N.Y. R2	58.00	58.50	59.00	
Pittsburgh District				
NevilleIsland, Pa. P6	56.00	56.50	56.50	57.00
Pittsburgh (N&S sides), Ambridge,	00.00			01100
Aliquippa, del	57.37	57.87	57.87	58.37
McKeesRocks, del	57.04	57.54	57.54	58,04
Lawrenceville, Homestead,	2		3,,,,,	00.01
Wilmerding, Monaca, del	57.66	58.16	58.16	58.66
Verona, Trafford, del	.58.19	58.69	58,69	59.19
Brackenridge, del	58.45	58.95	58.95	59.45
Bessemer, Pa. U5	56.00	* * * *	56.50	57.00
Clairton, Rankin, So. Duquesne, Pa. U5	56.00			
McKeesport, Pa. N3	56.00			57.00
Midland, Pa. C18	56.00			
Monessen, Pa. P7	56.00			

*		No. 2	Malle-	Besse-
Youngstown District	Basic	Foundry	able	mer
Hubbard.O. Y1			56.50	
Sharpsville, Pa. S6	56.00	56.50	56.50	57.00
			56.50	57.00
Youngstown Y1				57.00
Youngstown U5	56.00			
Mansfield, O., del	60.90		61.40	61.90
Duluth I-3	56.00	56.50	56.50	57.00
Erie, Pa. I-3	56.00	56.50	56.50	57.00
Everett, Mass. E1	60.75	61.25	61.75	
Fontana, Calif. K1	62.00	62.50		
Geneva, Utah C11	56.00	56.50	****	
GraniteCity,Ill. G4	57.90	58.40	58.90	
Ironton, Utah C11	56.00	56.50		
LoneStar, Texas L6	52.00	52.50*	52,50	
Minnequa, Colo. C10	58.00	59.00	59.00	
Rockwood, Tenn. T3			56.50	
Toledo, O. I-3	56.00	56.50	56.50	57.00
Cincinneti 3-1				51.00
Cincinnati, del	61.76	62.26		

<sup>\*</sup> Low phos, southern grade, † Phos., 0.30 max.

#### PIG IRON DIFFERENTIALS

Silicon: Add 50 cents per ton for each 0.25% Si or percentage thereof over base grade, 1.75-2.25%, except on low phos iron on which base is 1.75-2.00%.

is 1.70-2.00%.

Phosphorus: Deduct 38 cents per ton for P content of 0.70% and over.

Manganese: Add 50 cents per ton for each 0.50% manganese over 1% or portion thereof.

Nickel: Under 0.50% no extra; 0.50-0.74%, incl., add \$2 per ton and each additional 0.25%, add \$1 per ton.

#### BLAST FURNACE SILVERY PIG IRON, Gross Ton

(Base 6.0-6.50% silicon; and \$1.50 for each 0.5% S1; 75 cents for each 0.5% Mn over 1%)

ELECTRIC FURNACE SILVERY PIG IRON, Gross Ton (Base 14.01-14.50% silicon; add \$1 for each 0.5% Si to 18%; \$1.45 for each 0.5% Mn over 1%; \$2 per gross ton premium for 0.045% max P)

NiagaraFalls, N.Y. P15
Keokuk, Iowa, Openhearth & Fdry, freight allowed K2
Keokuk, OH & Fdry, 12½ lb piglets, 16% Si, frgt, allowed K2
Wenatchee, Wash. OH & Fdry, freight allowed K2.... 92.00

#### LOW PHOSPHORUS PIG IRON, Gross Ton

Cleveland, intermediate	Ph.	4			4.0				٠	٠	٠	٠										
Rockwood, Tenn, T3								 														
Steelton, Pa. B2								 			۰						.,	J,	ı,	ı,	64.	
Philadelphia, del																					64.	00
Troy, N.Y. R2								 											ı,		64.	00



### FROM TANK TRAILERS TO TELEVISION ANTENNAS

Take a look around and notice how often you see Penmetal expanded metal in use, today, in modern products everywhere. It is literally the material of a thousand uses.

Why is this material rapidly becoming a sign of good design, good engineering? Because it is strong and rigid, yet light in weight and low in cost. Because it permits free passage of light and air, and has that smart, clean, attractive appearance that typifies modern trends in design.

Penmetal expanded metal is sheet metal that has been slit and expanded to as much as ten times its original width. Up to 80% lighter than solid sheet of the same dimensions, the diamond truss pattern adds rigidity and strength.

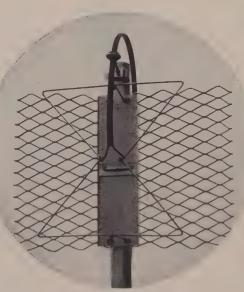
Available in corrosion-resistant metals as well as carbon steel; large or small mesh; light or heavy gauge. Easily formed, shaped and welded.

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District Sales Offices: Boston, Philadelphia, Parkersburg (W. Va.),
Detroit, Chicago, Dallas, Los Angeles, San Francisco, Seattle



The tank trailer, made by Trailmobile, Inc., Cincinnati, Ohio, uses Penmetal expanded metal for walkway.

Penmetal expanded aluminum is used for the television antenna manufactured by The Radiart Corporation of Cleveland, Ohio.

PM-34

#### WAREHOUSE STEEL PRODUCTS

(Representative prices, cents per pound, subject to extras, f.o.b. warehouse. City delivery charges are 20 cents per 100 lb except: New York, 30 cents; Philadelphia, 25 cents; Birmingham, Erie, St. Paul, 15 cents; Seattle and Spokane, Wash., no charge.)

		SHEETS					BARS-		Standard		
	Hot Rolled	Cold Rolled	Gal. 10 Ga.t	H.R.*	C.R.*	H.R. Rds.	C.F. Rds.‡	H.R. Alloy 4140††5	Structural Shapes	Carbon	Floor
Baltimore	6.20	7.64	7.78	7.00		6.86	8.176	12.04	6.98	6.85	7.98
Birmingham	6.10	7.00	8.002	6.30		6.15	8.90		6.35	6.35	8.25
Boston	6.89	7.83	9.18	7.13		6.87	8.35	12.13	7.06	7.13	8.26
Buffalo	6.18	7.15	8.70	6.79		6 35	7.70	12.02	6.59	6.68	7.88
Charlotte, N. C.	6.95	7.80	8.69	6.90		7.10	8.37		7.10	7.10	8.37
Chicago	6.18	7.12	7.95	6.42		6 23	7.30	11.60	6.46	6.33	7.46
Cincinnati	6.30	7.11	8.20	6.66		6.52	7.60	11.85	6.64	6.62	7.71
Cleveland	6.18	7.12	7.90	6.58		6.34	7.40	11.74	6.79	6.50	7.63
Detroit	6.38	7.29	8.22	6.69	7.36	6.56	7.60	11.97	6.91	6.80	7.80
Erie, Pa	6.15		8.15	6.45		6.23	7.50		6.46	6.33	7.46
Houston	7.15	7.60	9.23	7.45	9.30	7.45	9.30		7.35	7.20	8.55
Los Angeles	7.25	9.00	8.60	7.55	11.20	7.15	9.10	13.10	7.35	7.20	9.25
Milwaukee	6.35	7.29	8.12	6.59		6.45	7.57	11.77	6.63	6.50	7.63
Moline, Ill	6.53	7.47	8.35	6.77	,	6.63	7.65		6.81	6.68	
New York	6.78	7,52	8.37	7.16		7.06	8.436	11.99	6.90	6.99	8.30
Norfolk, Va	6.90			7.00		7.00	8.50		7.00	7.00	7.85
Philadelphia	6.35	7.13	7.87	7.02	8.80	6.87	8.196	11.74	6.67	6.63	7.66**
Pittsburgh	6.18	7.12	8.00	6.55		6.28	7.65	11.60	6.46	6.33	7.46
Portland, Oreg	7.90	8.45	9.15	7.65		7.35	10.65		7.25	7.30	9.15
Richmond, Va	6.50		8.67	7.10		7.05	8.20		7.10	6.85	8.20
St. Louis	6.48	7.42	8.25	6.72		6.58	7.70	11.90	6.86	6.73	7.86
St. Paul	6.84	7.78	8.66	7.08		6.94	8.06		7.12	6.99	8.12
San Francisco	7.35	8.70	9.30	7.60		7.15	9.75	12.90	7.25	7.20	9.25
Seattle	8.15	9.50	9.80	8.00		7.60	10.65	13.50	7.50	7.60	9.40
Spokane	8.15	9.407	9.80	7.60		7.60	10.558	14.15	7.25	7.35	9.40
Washington	6.71	7.65	8.35	7.51		7.37	8.43		7.49	7.36	8.49

\*Prices do not include gage extras; fprices include gage and coating extras, except Birmingham (coating extra excluded) and Los Angeles (gage extras excluded); fincludes 35-cent special bar quality extra; \$as rolled; \*\*½-in, and heavier, add 0.34c for 12 gage and lighter. ftas annealed. Base quantities, 2000 to 9999 the except as noted: Cold-rolled strip and cold finished bars, 2000 the and over, except in Seattle where base is 2000 to 9999 lb; \$-1000 to 1999 lb; \$-1000 lb and over; \$7-1500 lb to 3899; \$-under ½ in.

#### Warehouse Steel Sales Decline

Many distributors report April volume running 10 to 15 per cent below March tonnage and as much as 30 per cent from a year ago. Mills press for orders

Boston — Lack of tonnage sales hampers warehouses in liquidating heavy inventories on most carbon products. Slight improvement in April did not materialize with most warehouses, volume being off 10 per cent with some from March, and 30 per cent from April, 1953.

There are exceptions in highly competitive selling, but the slow working off of inventory is general. Especially slow are heavy bars and plates, also carbon sheets. This means warehouse orders placed with mills are the lowest in years. Distributors are banking on depletion of more burdensome stocks to balance level by July 1.

Philadelphia — Warehouse business has eased off, with latest indications pointing to a decline of around 15 per cent in April business from March. Moreover, leading distributors anticipate no improvement in May. In fact, one seller says he will consider himself lucky if volume holds at the April level. Reduction in rail freight rates a few weeks ago is reflected in a decline in warehouse prices on mechanical and welded carbon tubing and stainless pipe and

tubing. No changes have been noted in prices on sheets, strip, bars and certain of the other more common grades as a result of rail rate revisions, although adjustments may come

Chicago — Steel warehouses find little in their sales picture to give

encouragement or discouragement for the future. Lower volume one week is followed by higher the next with the average continuing essentially unchanged. All demand can be accommodated comfortably.

Pittsburgh—Sales are leveling off, but distributors expect gains in May. Improving strength in the market is felt in rising sales of tool, agricultural and stainless steels. Warehouses are buying and selling small quantities of sheets, bars and tubular products

Cleveland — Warehouses are actively canvassing customers for or-

#### STEEL IMPORT PRICES

(Base, per 100 lb, landed, duty paid)

	North Atlantic	South Atlantic	Gulf Coast	West Coast
Deformed Bars, Intermediate, ASTM-A-305	\$4.55	\$4.55	\$4.50	\$4.83
Bar Size Angles	4.40	4.40	4.35	4.68
Structural Angles	4.40	4.40	4.35	4.68
I-Beams	4.40	4.40	4.35	4.68
Wide Flange Beams	4.80	4.80	4.80	5.08
Sheet and Plate, 10 gage, 11 gage, 5' x 10'	5.50	5.50	5.45	5.78
Furring Channels, C.R., 1000 ft, 34 x 0.30 lb				
per ft	25.50	25.70	25.50	26.34
Barbed Wire	6.60	6.60	6.60	6.68
Merchant Bars	4.55	4.55	4.50	4.83
Hot-Rolled Bands	4.70	4:70	4.65	4.98
Wire Rods, Thomas Commercial No. 5	4.77	4.84	4.82	5.09
Wire Rods, O-H, Cold Heading Quality No. 5	5.23	5.30	5.28	5.55
Bright Common Wire Nails, 8d	6.55	6.65	6.60	6.85

\*Not including \$2.20 per net ton customarily charged in most West Coast ports for wharfage and handling.

	Wgt/Foot/Lb	Gulf Port	West Coast	Vancouver
Seamless A.P.I. Casing, Grade J-55 5½ in	15.5	\$1.47/ft 2.10/ft	\$1.51/ft 2.17/ft	\$1.32/ft 1.90/ft
Seamless N-80 Casing:		1.94/ft	2.11/ft 2.00/ft	1.75/ft
7 in	23	2.50/ft	2.70/ft	2.36/ft
2 % in		0.60/ft 0.80/ft	0.63/ft 0.83/ft	0.55/ft 0.73/ft

Sources of shipment: Western continental European (Schuman Plan) countries.

ders but volume shows little change over recent weeks. Seasonal pickup in building steel is reported, but other lines of consumption continue to order sparingly. On the whole, while business is down from a year ago it still totals sizable volume and stacks up well with that entertained by the distributors in normal years.

Warehouse stocks are in the best shape they have been in years. As a result the distributors are not pressing the mills for shipments. At the same time, mill salesmen are pressing warehouses for orders on a scale not experienced in a decade or

Cincinnati-April lines up as a disappointing month to warehousemen. So long as prompt mill deliveries are offered, warehouses do not expect to see much of an improvement.

Los Angeles-Inquiries are more numerous over a broad range of steel products. For most distributors order volume in April was about 15 per cent under that of March, reversing an upward trend evident since January. Prices on galvanized sheets are down 75 cents to \$8.60 per 100 pounds.

Seattle-Warehouse volume is increasing and the future looks promising. Buying is general out of stock. no item outstanding. Inventories are in good shape and warehouses are actively seeking new business. Prices continue stable in this area.

#### Tubular Goods . . .

Tubular Goods Prices, Page 157

Pittsburgh — Buttweld pipe sales are leveling off, as is demand for seamless tubes. Tubemakers say their customers are completing inventory adjustments. A drop in cancellations provides evidence of a balanced market.

Seattle-Sentiment is optimistic in the cast iron pipe market here as consumer interest is expanding with the advancing season.

#### Alloy Steel . . .

Cleveland-Pickup in demand for alloy steel is reported by Republic Steel Corp. As a result of improved orders the company has resumed operations at its Massillon, O. plant which had been closed down since Mar. 27. Three open hearths and the blooming mill have been put back into operation and 300 furloughed employees recalled.

At the same time, 350 workmen at the company's Canton, O. plant have been recalled over the past three weeks.

### Revise Titanium Wire, Strip Prices

Producer effects adjustments as of Apr. 26, first change in schedules for these products in several years. Revisions in wire list slight, but strip is cut an average of 12 per cent

New York-Adjustments in prices on titanium strip and wire, effective on shipments beginning Apr. 26, are announced by the Titanium Metals Corp. of America.

For wire the adjustments represent no great change from past levels, but for strip, practically all the prices range downward, with an average reduction of about \$2.75 per pound, or about 12 per cent.

These revisions are the first effected on these titanium products for several years, strip and wire not being involved in the recent flurry of price changes announced by produc-

The current changes are explained as due to better cost studies which place the company in position to adjust base prices and extras to better reflect manufacturing costs and vields.

New base prices and extras fol-

#### TITANIUM STRIP

Types: Cold-rolled commercially-pure and alloy

Pase Price: \$15 per lb, f.o.b. West Leechburg, Pa., for Ti-75A and Ti-100A, \$17.50 per lb, f.o.b. West Leechburg, Pa., for alloy grades.

Finish Extras:	Extra, \$ per lb
No. 1 (cold-rolled, annealed and pickled)  No. 2 (annealed, pickled and rerolled)  Nos. 4, 6 and 7 finishes (cold-rolled, special polishing) in cut lengths, under 24" width may be priced on application.	Base Base

Edge Extras:	Extra. \$ per lb
No. 1 (round or square edge rolled)	1.00
No. 3 (square slit edges)	Base
No. 5 (square rolled or filed after	
slitting)	0.75

Thickness and Width Extras for Cut Lengths: Add \$0.50 per lb to applicable extra for coil stock.

Quantity Extra: Applicable to individual items of the same thickness and width ordered at one time for shipment at one time to one destination.

in Pounds S per pound 10,000 and over 5,000 to 9,999 1,000 to 4,999 500 to 999 100 to 499 Rase

### TITANIUM WIRE

Types: Cold drawn commercially-pure and alloy grades.

Base Price: \$11 per lb, f.o.b., Dunkirk, N. Y. for Ti-75A. Prices on request for alloy grades

Finish Extras: Finish	Extra, \$ per lb
Cold-drawn	Base 1.00
Specially coated for cold heading Polished	0.50
When wire is shipped on spools a	

charge will be made for spools. This charge will be rebated on the return of the spools to the mill in good condition.

Size Extras:	
Diameter ordering	Extra,
range in inches	\$ per lb
Over 0.250 to 0.3125 (5/16")	2.75
Over 0.130 to 0.250	8.00
Over 0.070 to 0.130	12.00
Over 0.022 to 0.070	17.00
Over 0.010 to 0.022	28.00
Under 0.010	n request

of a grade and diameter ordered at one til for shipment at one time to one destination.

Orderii in I	ng Wei Pounds										Extra, \$ per lb
10,000	and o	ver									Base
5.000	to 9.9	999.									0.50
1.000	to 4.9	999.									1.00
500	to 9	999.									1.50
100	to 4	199.									2.00
1		99.									

Thickness & Width Extra for Coils:		Extra.
Thickness in Inches	Width in Inches	\$ per lb
0.002 to 0.006 excl.	Less than 8 8 and over	8.25 on request
0.006 to 0.010 excl.	Less than 8	6.75 7.25 on request
0.010 to 0.016 excl.	Less than 8	5.75 5.25 5.50
0.016 to 0.021 excl.	Less than 8 8 up to 20 20 to 24 excl	4.75 4.25 4.50
0.021 to 0.026 excl.	Less than 8	3.75 3.25 3.50
0.028 to 0.033 excl.	Less than 8	3.00 2.50 2.75
0.033 to 0.041 excl.	Less than 8	2.50 2.00 2.25
0.041 to 0.061 excl.	Less than 8	2.00 1.50 1.75
0.061 to 0.126 excl.	Less than 8	1.50 1.00 1.25
0.126 to 0.187 incl.	Less than 8 8 up to 20	1.00 0.50 0.75

### Moderate Pickup in Sheets Develops

Liquidation of consumers' inventories progressing. Rise in prompt shipment and fill-in orders reported by mills. Cautious buying expected over remainder of quarter

Sheet and Strip Prices, Page 154 & 155

Washington—Government services are buying more steel direct this quarter than during the first three months, also they are placing more contracts for flat-rolled fabricated products. Navy closes May 6 on 320 tons, hot-rolled carbon, pickled and oiled mill edge sheets. Substantial tonnages are also required for shelving, lockers and grain storage bins, the latter for storage of 100 million bushels. Deliveries starting May 15 are wanted. Large tonnage of galvanized is required.

Butler Mfg. Co., Galesburg, Ill., has the contract for 13,500 bins, more than \$7 million. Galesburg plant will go on a 24-hour schedule. Ventilators and doors will be fabricated at Kansas City and shipped to Galesburg for assembly.

In addition to 13,500 bins of 3250-bushel capacity each awarded Butler Mfg. Co., contracts have also been given Black, Sivalls & Bryson, Kansas City, Mo., 4500 units; Western Engineering & Contracting Co., La Crosse, Wis., 875; Steel Co. of Ohio, Columbus, O., 2700. Contracts for larger bins, 41,160-bushel capacity, went to Great Lakes Steel Corp., Detroit, 450 units, and Dickinson-Leck Co., Bemidji, Minn., 90 units.

New York—Sheet metal shops are increasing specifications but are still fabricating more tonnage than they are buying. This means that inventories are being gradually worked off, although sellers believe it will be some time before surplus tonnage is completely eliminated.

Boston—Flat-rolled steel consumers are buying on such short lead-time shortages are narrowly averted if something goes wrong with delivery promises. Bookings for May are somewhat ahead of the April rate, but largely for fill-in sizes and grades with the buying pattern unchanged, namely small orders for prompt shipment. This is emphasized by the small volume taken for June.

Several large consumers of sheets are holding off because of coming product changes. By fall two airconditioning departments will move and other revised product schedules will mean new specifications. Those in this group are buying only enough steel to finish out requirements.

Hot-rolled strip is notably slow. Converters are drawing on inventory.

Philadelphia—Sheet sellers report a definite pick-up in demand, particularly for cold rolled. The market is far from brisk, but business compared with a month ago is definitely on the upgrade. Cold-rolled sheets for air conditioning units are moving well, although the manufacturing season in this line should be well wound up by end of May. Among the specialties, enameling stock is moving fairly briskly; also high silicon sheets.

Pittsburgh—Orders for hot-rolled sheets are generally dull. Galvanized demand is expected to increase later in second quarter as is that for cold-rolled. Gradual improvement is already noted in sales of cold-rolled.

Cleveland—Some improvement in demand for the flat-rolled products is noted here but buying continues of a cautious nature. Inventory liquidation by consumers is believed pretty well advanced but there is as yet no rush to replenish depleted stocks.

Trade expectations here are that demand will expand somewhat over the next two months, followed by a summer letdown, which in turn will give way to a fall pickup.

Sellers point out that order volume in sheets and strip, while down from last year, has held up substantially better than that in some other products, notably bars, this being explained by the broad use of sheets.

Chicago—Sheetmakers are experiencing a little increased demand from auto builders, giving rise to speculation as to whether there will be a significant bulge in car sales as predicted. Neither does any other consuming field reflect new strength, yet optimism for the future prevails. Strongest demand is in galvanized sheets.

Cincinnati — Offerings under mill prices continue to depress the market in sheets. Warehouses have ample stocks.

St. Louis—Sheet sales continue a mild pickup which promises to put April volume 15 to 20 per cent of that of March. The district's ingot production rate has risen. Granite City Steel Co., boosted its output 25 per cent.

There is no increase in forward or-

dering. Little tonnage is booked beyond June. But inquiries indicate consumers are wondering if their inventories are not now at the minimum advisable. Demand from farm equipment makers remains good but below last year's normal. Galvanized roofing is excellent.

#### Steel Bars . . .

Bar Prices, Page 154

Cleveland—Large bar inventories are gradually being liquidated but current buying is only slightly improved. Continued uptrend is expected over remainder of second quarter.

Republic Steel Corp. is issuing new extra cards, dated Apr. 26, covering hot-rolled alloy and special steels, blooms, billets and slabs, bars and spring sizes, and cold-finished alloy steel bars.

These cards contain a complete list of present standard, tentative standard and boron grades, together with applicable grade extras. The new cards reflect the recently announced reduced grade extras for steels containing .15 to .25 molybdenum, together with other minor changes.

Boston—Carbon bar buying is limited to fill-in lots, promptly filled for smaller sizes 2-inch and under, and accounting for the bulk of requirements. Bookings for May are only slightly heavier than in April, and the supply pattern is confused by stock offerings. Alloy volume is supported by potential small arms needs with tonnage for forge shops off.

New York—While cold-drawn bar interests are specifying more freely, hot carbon bar producers report a lag in demand from most other consuming directions.

Pittsburgh — Customers, such as appliance manufacturers, continue to reduce inventories. A long, slow process, this results in continued dull sales. Low orders from warehouses contribute to slow conditions here.

Philadelphia—Hot carbon bar sellers are experiencing a limited but sustained volume of demand. Actually there is a pick-up in specifications from cold drawers, who, in turn, are reporting betterment from warehouses and from government agencies.

Sixteen suppliers recently submitted bids on 775 tons of 2-7/16-inch cold drawn bars for the Navy for delivery in May, indicating that while cold drawn business is picking up sellers are after orders and can still offer good delivery promises.

Cincinnati—Stocks of bars are substantial. Some distributors have ex-



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### Wire Rope Sling Department AMERICAN CHAIN & CABLE

Wilkes-Barre, Pa., Chicago, Denver, Houston, Los Angeles, New York, Odessa, Tex., Philadelphia, Pittsburgh, San Francisco, Bridgeport, Conn. plus Links Shackles Hooks perienced a pick-up, while others claim demand is no better.

#### Plates . . .

Plate Prices, Page 154

Boston — So long as fabricating shops can get carbon plates in two to three weeks, consumers display slight interest in building inventory. This applies to tank shops that have registered best improvement in bookings. Orders cover specific tonnage to meet demand of each job and little more

Demand for floor plates is slow, readily filled from warehouses with ample stocks. Shipbuilding is slack.

New York—Plate sellers report no gain in buying, but believe any shift in trend will be upward, although not pronounced much before early fall.

Philadelphia — Plate business is slow and shows little fluctuation. Most district producers can promise deliveries within a week to two weeks. Encouraging, however, is the fact most fabricators are consuming more tonnage than they are taking in, which means slow but steady reduction in inventories.

Pittsburgh — Construction industries continue to order large quantities of plates, but demand from other quarters is slow.

Seattle—Smaller plate fabricators report an increasing volume of new work. Materials are in easy supply.

#### Semifinished Steel . .

Semifinished Prices, Page 154

New York—Rapid increase in the steelmaking capacity of the nation the past few years has been accompanied by an even greater rise in the average capacity of steelmaking furnaces, reports the American Iron & Steel Institute.

While total annual capacity of open-hearth furnaces at 109 million net tons on Jan. 1 was nearly 30 per cent higher than in 1945, average capacity of these furnaces per heat had been increased 37 per cent, to approximately 160 tons. Despite the many new furnaces built since the war, the total number of open hearths had been reduced to 934 at the beginning of 1954 from 990 in 1945.

Youngstown—District steelmaking operations last week were increased to 70 per cent of capacity largely as result of improved operations at Youngstown Sheet & Tube Co.'s Campbell Works.

Los Angeles—Kaiser Steel Corp., Fontana Works, banked blast furnaces and open hearths when an un-



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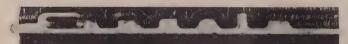
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#### Wire . . .

Wire Prices, Page 156

Cleveland — Reflecting seasonal pickup in merchant wire demand, Republic Steel Corp. reports sales of finished wire products in first quarter this year doubled those in last quarter of 1953.

J. P. Distler, manager, Wire Division sales, says buying by farmers was primarily responsible for the increase in volume.

Industrial wire demand also is reported showing some improvement. Sluggish business in this area is attributed to inventory correction.

Boston—Heavier orders for furniture spring wire reflect exhaustion of inventories. Bookings are accompanied with delivery pressure. Gradual increase in wire buying in most cases stem from low stocks, although demand for cold heading stock lags.

Wire mill capacity was not filled for April and will not be taken for May, although bookings are running slightly heavier, manufacturers' wire included

#### Tin Plate . . .

Tin Plate Prices, Page 156

Washington — Shipments of metal cans in February totaled 260,053 tons, against 264,708 in January and 252,357 in February a year ago. Total for the first two months of 524,761 tons compared with 522,074 in the first two months of 1953.

New York—Dependence of this country on imports of African palm oil has been removed by a discovery stemming from a research project of the American Iron & Steel Institute.

Palm oil is used in producing hot dipped tin plate and in cold rolling some thin sheet and strip. The Institute's research shows specially prepared beef tallow makes an excellent substitute for palm oil for those purposes.

Pittsburgh — Tin mill operations range from 80 to 90 per cent of capacity. While some purchasing by canmakers may be traced to hedging against the possibility of a steel strike, the second quarter is expected to be a peak season for tin plate.

Chicago—Tin plate output is holding strong in keeping with can and container manufacturing operations. Part of the present activity is seasonal.



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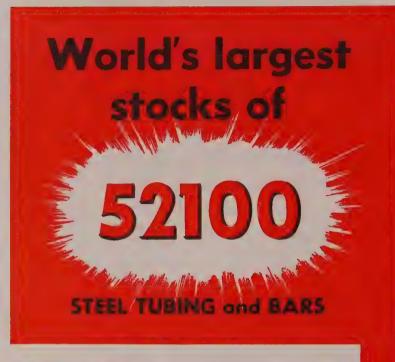


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#### Pig Iron . . .

Pig Iron Prices, Page 158

New York—Blast furnace production increased slightly during March as compared with the preceding month but was down sharply as compared with March, 1953, reports the American Iron & Steel Institute.

Output for the month totaled 4,959,303 net tons, of which 4,907,147 tons were pig iron and 52,156 tons ferromanganese and spiegeleisen. In the preceding month production amounted to 4,810,554 tons, divided 4,764,613 tons pig iron, and 45,941 tons ferromanganese and spiegeleisen. In March a year ago output totaled 6,677,361 tons, of which 6,611,040 tons were pig iron and 66,321 ferromanganese and spiegeleisen.

In the first three months this year 15,202,897 tons of pig iron and 146,473 tons of ferromanganese and spiegeleisen were produced. This compares with 18,906,323 tons of pig iron and 216,939 tons of ferromanganese and spiegel in the corresponding three months of last year.

Production by districts in March and the year to date follows:

#### BLAST FURNACE PRODUCTION (Net Tons)

Ferromanganese & Spiegel March to Date March to Date District . 1,058,943 3,329,307 24,117 59,341 Eastern Pittsburgh-Youngstown 1,692,171 5,176,960 23,406 61,976 Cleveland-Detroit ... Chicago . 470,452 1,501,032 1,053,638 4,633 25,156 Southern 436.304 1,291,822 195,639 646,322 Western Total ... 4,907,147 15,202,897 52,156 146,473

New York—Pig iron movement in May is expected to show little variation from the rate of the past two months. Consumer inventories are gradually being reduced, but there will not likely be any spurt in buying unless casting demand picks up.

Philadelphia—Pig iron business continues spotty, with little early change in prospect. Pig iron production has been off the last two or three weeks in this district, but stocks at furnaces continue ample. The Birdsboro, Pa., stack of the Colorado Fuel & Iron Corp. is scheduled to go down for repairs July 1.

Cleveland—Spotty foundry operations are reflected in continued cluggish demand for merchant pig iron. The casting shops are taking in tonnage as needed. With iron available for prompt shipment from the furnaces they are not inclined to worry much about inventories.

Blast furnace operations are curtailed in this area. Last week, however, Republic Steel Corp. relighted



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an idle blast furnace here which has been out of production since Jan. 22.

Production of pig iron in the Detroit-Cleveland area in March registered a slight gain over that of the preceding month but was down sharply from March a year ago. Output for the month was 470,452 tons against 442,654 in February and 732,437 in March, 1953.

Chicago—Pig iron demand varies little from week to week. April volume stacks up about the same as that in March. Gray iron foundries are maintaining low inventories of metallics and fuel, and consequently they are ordering for prompt shipment as casting orders come in.

#### Iron Ore . . .

Iron Ore Prices, Page 175

New York—East coast seaports and those on the Gulf of Mexico are expanding their iron ore handling facilities to accommodate the increasing flow of imports, reports the American Iron & Steel Institute. At the same time, iron ore ports on the Great Lakes are making their handling facilities more efficient.

More than a dozen salt water ports received imported ore during 1953, but Baltimore, Philadelphia and Mobile accounted for about 80 per cent of the total.

Delaware river ports received a record 1.2 million tons. Mobile, Ala., took in nearly 900,000 tons and expects to handle 3 million tons yearly.

Cleveland—Iron ore is beginning to move down the Great Lakes after the late opening of the 1954 shipping season. To date the movement is only a trickle as compared with recent past years. As of Apr. 26 shipments to lower lake ports totaled only 765,423 tons, reports the Lake Superior Iron Ore Association. This contrasts with 6,891,643 tons moved up to Apr. 26 last year.

#### Structural Shapes .

Structural Shape Prices, Page 154

Boston — Although sniping continues, prices for fabricated structural steel are leveling off. Shops have generally adjusted to 40 hours per week, eliminating overtime. For most projects estimates are competitive. Heavy bridge requirements are ahead, including 50,000 tons, bridges, Massachusetts turnpike.

New York—Structural activity is marking time. Orders are spotty and comprise few outstanding jobs.

Philadelphia — Structural steel activity has tapered off, at least temporarily, although a fair amount of work is actively being figured.



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G PROBLEM

#### CURRENT FERROALLOY QUOTATIONS

Prices as reported to STEEL

#### MANGANESE ALLOYS

Spiegeleisen: (19-21% Mn, 1-3% Si). Carlot per gross ton \$86, Palmerton, Pa.; \$87 Clairton and Duquesne, Pa. (16 to 19% Mn) \$34 per ton, Palmerton, Pa.; \$85 per ton, Clairton and Duquesne, Pa.

Standard Ferromanganese: (Mn 74-76%, C 7% approx.) Base price per net ton \$200, Clairton, Duquesne, Johnstown and Sheridan, Pa.; Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; and Portland, Oreg.; add or subtract \$2.00 for each 1% or fraction thereof of contained manganese over 76% or under 74%.

(Mn 79-81%) Lump \$208 per net ton, f.o.b. Anaconda or Great Falls, Mont, Add \$2.60 for each 1% above \$1%; subtract \$2.60 for each 1% below 76%, fractions in proportion to 0.1%.

Low-Carbon Ferromanganese, Regular Grade: (Mn 85-90%). Carload, lump, bulk, max, 0.07% C, 27.95c per lb of contained Mn, carload packed 28.7c, ton lots 29.8c, less ton 31.0c, Delivered, Deduct 0.5c for max, 0.15% C grade from above prices, 1e for max, 0.30% C, 1.5c for max 0.50% C, and 4.5c for max 75% C—max 7% Sl. Special Grade: (Mn 90% min, C 0.07% max, P 0.06% max). Add 2.05c to the above prices. Spot, add 0.25c.

Medium-Carbon Ferromanganese: (Mn 80-85% C 1.5% max), Carload, lump, bulk 21.35c per lb of contained Mn, carload packed 22.1c, ton lot 23.2c, less ton 24.4c. Delivered. Spot, add 0.25c.

Manganese metal, 2" x D (Mn 95.5% min. F 2% max, Si 1% max, C 0.2% max); Car load, lump, bulk, 36.2c per lb of metal packed, 36.95c; ton lot 38.45c; less ton lot 40.45c, Delivered, Spot, add 2c. ton lots

Electromanganese: Min. carloads, 30c; 2000 lb to min. carloads, 32c; 250 lb to 1999 lb, 34c; less than 250 lb, 37c. Premium for hydrogen-removed metal, 1.5c per lb, f.o.b. cars, Knoxville, Tenn. Freight allowed to St. Louis or to any point east of Mississippi.

Silicomanganese: (Mn 65-85%). Contract. lump, bulk, 1.50% C grade, 18-20% Si, 11.00c per lb of alloy, carload packed, 11.75c, ton lots 12.65c, less ton 13.65c. Freight allowed, for 2% C grade, Si 15-17%, deduct 0.2c from above prices, For 3% C grade, Si 12-14.5%, deduct 0.4c from above prices, Spot, add 0.25c.

#### TITANIUM ALLOYS

Ferrotitanium, Low-Carbon: (Tl 20-25%, Al 3.5% max, Si 4% max, C 0.10% max). Contract, ton lots 2" x D, \$1.50 per lb of contained Ti; less ton \$1.55. (Tl 38-43%, Al 8% max, Si 4% max, C 0.10% max). Ton lots \$1.35, less ton \$1.37, f.o.b. Niagara Palls, N, Y., freight allowed to St. Louis. Spot, add 5c.

6-8%). Contract \$177 per net ton, f.o.b, Ni-agara Falls, N. Y., freight allowed to destina-tions east of Mississippi river and north of Baltimore and St. Louis.

Ferrotitanium: Medium-Carbon: (Ti 17-21%, C 2-4.5%). Contract \$195 per ton, f.o.b, Ni-arar Falls, N. Y., freight not exceeding St. Louis rate allowed.

#### CHROMIUM ALLOYS

High-Carbon Ferrochrome: Contract, C.1. lump, bulk 24.75c per lb of contained Cr; c.1. packed 25.65c, ton lot 26.80c, less ton 28.20c. Delivered. Spot, add 0.25c.

Low-Carbon Ferrochrome: (Cr 67-72%). Contract, carload, lump, bulk, max. 0.025% C (Simplex) 34.50c per lb contained Cr. 0.03% C 36.50c. 0.04% C 35.50c, 0.06% C 34.50c, 0.15% C 33.75c. 0.20% C 33.50c. 0.50% C 33.25c. 1% C 33.75c. 0.20% C 32.85c 0.50% C 32.25c 1% C 32.75c. Carload packed add 1.1c, ton lot 2.2c, less ton add 3.9c. Delivered. Spot, add 0.25c.

Foundry Ferrochrome, High-Carbon: (Cr. 62-68%, C 5-7%). Contract, c.l. 8 M x D, bulls. 26.25c per lb contained Cr. Packed, c.l. 27.15c, ton 28.50c, less ton 30.25c. Delivered. Spot, add 0.25c.

Foundry Ferrochrome, Low-Carbon: (Cr 50-54%, Si 28-32%, C 1.25% max). Contract, carload, packed, 8 M x D, 18.35c per lb of alloy; ton lot 19.2c; less ton lot, 20.4c, delivered; spot, add 0.25c.

Low-Carbon Ferrochrome Silicon: (Cr 34-41%, Si 42-49%, C 0.05% max). Contract, carload, lump, 4" x down and 2" x down, bulk, 24.75 per lb of contained chromium plus 10.8c per pound of contained silicon; 1" x down, bulk 25.25c per pound of contained chromium plus 11c per pound of contained silicon. F.o.b. plant; freight allowed to destination.

Chromium Metal: (Min 97% Cr and 1% contract, 1" x D; packed, max 0,50%, carload \$1.12, ton lots \$1.14; less ton \$1.16. Delivered. Spot, add 5c. Prices on 0.10 per cent carbon grade, add 4c to above prices.

#### VANADIUM ALLOYS

(V 35 Con-Ferrovanadium: Open-hearth Grade (V 35-55%, Si 8-12% max, C 3-3.5% max), Contract, any quantity, \$3 00 per lb of contained V. Delivered. Spot, add 10c Crucible-Special Grades (V 35-55%, Si 2-3.5% max, C 0.5-1% max), \$3.10. Primos and High Speed Grades (V 35-55%, Si 1.50% max, C 0.20% max) \$3.20.

Grainal: Vanadium Grainal No. 1, \$1 per lb; No. 6, 68c; No. 79, 50c, freight allowed.

Vandium Oxide: Contract, less carload lots \$1.28 per lb contained  $V_2O_5$ , freight allowed. Spot, add 5c.

#### SILICON ALLOYS

25-30% Ferrosilicon: Contract, carload, lump, bulk, 20.0c per lb of contained Si, packed 21.40c; ton lot 22.50c f.o.b. Niagara Falls, freight not exceeding St. Louis rate allowed.

50% Ferrosilicon: Contract, carload, lump, bulk, 10.80c per lb of contained Si, carload packed 12.40c, ton lot 13.85c, less ton 15.5c. Delivered. Spot, add 0.45c.

Low-Aluminum 50% Ferrosilicon: (Al 0.40% max). Add 1.7c to 50% ferrosilicon prices.

65% Ferrosilicon: Contract, carload, lump, bulk, 12.2c per pound contained silicon; carload packed 13.55c; ton lots, 14.75c; less ton, 16.1c, dellvered. Spot, add 0.35c.

75% Ferrosition: Contract, carload, lump, bulk, 13.8c per lb of contained Si, carload packed 15.1c, ton lot 16.25c, less ton 17.5c. Delivered. Spot, add 0.8c.

90-95% Ferrosilicon: Contract, carload, lump, bulk, 17.0c per lb of contained Si, carload packed 18.2c, ton lot 19.15c, less ton 20.2c. Delivered. Spot, add 0.25c.

Silicon Metal: (Mn 97% Si and 1% max Fe). C.I. lump, bulk, regular 18.5c per lb of SI, c.l. packed 19.7c, ton lot 20.6c, less ton 21.6c. Add 0.5c for max, 0.10% calcium grade, Deduct 0.5c for max 2% Fe grade analyzing min 96% Si, Spot, add 0.25c.

Alsifer: (Approx. 20% Al, 40% Si, 40% Fe) Contract, basis f.o.b. Niagara Falls, N. Y., lump, carload, bulk, 9.25c per lb of alloy, ton lots packed 10.15c, 200 to 1999 lb 10.50c, smaller lots 11c.

#### ZIRCONIUM ALLOYS

12-15% Zirconium Alloy: (Zr 12-15%, Si 30-43%, Fe 40-45%, C 0.20% max). Contract, c.l. lump, bulk 8,0c per lb of alloy, c.l. packed 8.75c, ton lot 9.5c, less ton 10.35c. Delivered. Spot, add 0.25c.

35-40% Zirconium Alloy: (Zr 35-40%, Si 47-52%, Fe 8-12%, C 0.50% max). Contract carload, lump, packed 20.25c per lb of alloy, ton lot 21c, less ton 22.25c. Freight allowed. Spot, add 0.25c.

#### BORON ALLOYS

Ferroborn: (B 17.50% min, Si 1.50% max, Al 0.50% max, C 0.50% max). Contract, 100 lb or more 1" x D, \$1.20 per lb of alloy. Less than 100 lb \$1.30, Delivered, spot add 5c. F.o.b. Washington, Pa., prices, 100 lb and over are as follows: Grade A (10-14% B) 85c per pound; Grade B (14-18% B) \$1.20; Grade C (19% min B) \$1.50.

Borosil: (3 to 4% B, 40 to 45% Si), \$5.25 per lb contained B, delivered to destination.

Bortam: (B 1.5-1.9%), Ton lots, 45c per lb; smaller lots, 50c per lb.

Carbortam: (B 1 to 2%) Contract, lump, carloads 9.50c per lb, f.o.b. Suspension Bridge, N. Y., freight allowed same as high-carbon ferrotitanium.

#### CALCIUM ALLOYS

Calcium-Manganese-Silicon: (Ca 16-20%, Mn 14-18% and Sl 53-59%). Contract, carload, lump, bulk 20.0c per lb of alloy, carload packed 20.8c, ton lot 22.3c, less ton 23.3c. Delivered. Spot, add 0.25c.

Calcium-Silicon: (Ca 30-33%, Si 60-65%, Fe 1,50-3%), Contract, carload, lump, bulk 19.0c per lb of alloy, carload packed 20.2c, ton lot 22.1c, less ton 23.5c. Deld. Spot, add 0,25c.

#### BRIQUETTED ALLOYS

Chromium Briquets: (Weighing approx. 3% 1b each and containing exactly 2 lb of Cr). Contract, carload, bulk, 16.25c per lb of briquet, carload packed 16.95c, ton 17.75c, less ton 18.65c, Deld, Add 0.25c for notching. Spot, add 0.25c 18.65c. D add 0.25c

Ferromanganese Briquets: (Weighing approx. 3 lb and containing exactly 2 lb of Mn). Contract, carload, bulk 12.45c per lb of briquet, c.l. packaged 13.25c, ton lot 14.05, less ton 14.95c. Delivered, Add 0.25c for notching. Spot, add 0.25c.

Silicomanganese Briquets: (Weighing approx. 3½ lb and containing exactly 2 lb of Mn and approx. ½ lb of Si). Contract, c.l. bull 2.55c, per lb of briquet, c.l. packaged 13.45c, ton lot 14.25c, less ton 15.15c Delivered. Add notching. Spot, add 0.25c.

Silicon Briquets: (Large size—weighing approx. 5 lb and containing exactly 2 lb of Si). Contract, carload, bulk 6.3c per lb of briquet. Packed c.1, 7.10c, ton lot 7.9c, less ton 8.8c. Delivered. Spot, add 0.25c.

(Small size—Weighing aprox, 2½ lb and containing exactly 1 lb of Si). Carload, bulk 6.45c. Packed c.l. 7.25c, ton lot 8.05c, less ton 8.95c. Delivered. Add 0.25c for notching, small size only. Spot, add 0.25c.

Molybdic-Oxide Briquets: (Containing 2½ lb of Mo each) \$1.14 per pound of Mo contained, f.o.b. Langeloth, Pa.

#### TUNGSTEN ALLOYS

Ferrotungsten: (70-80%), 5000 lb W or more \$3.80 per lb of contained W; 2000 lb W to 5000 lb W, \$3.90; less than 2000 lb W, \$4.02, f.o.b. Niagara Falls, N. Y.

#### OTHER FERROALLOYS

Ferrocolumbium: (Cb 56-60%, Sl 8% max.) C 0.4% max). Contract, ton lot, 2" x D, \$9.50 per lb of contained Cb, less ton \$9.55. Delivered. Spot, add 10c.

Ferrotantalum—Columbium: (Cb 40% approx., Ta 20% approx., and Cb and Ta 60% min, C 0.30% max) ton lots, 2" x D, \$4.75 per lb of contained Cb plus Ta, deld.; less ton lots \$4.80.

Silicaz Alloy: (Si 35-40%, Ca 9-11%, Al 6-8%, Zr 3-5%, Ti 9-11%, B 0.55-0.75%). Carload packed 1" x D, 45c per lb of alloy, ton lot 47c, less ton 49c. Delivered.

SMZ Alloy: (Si 60-65%, Mn 5-7%, Zr 5-7%, Fe 20% approx). Contract, carload, packed, %" x 12 M, 17.5c per lb of alloy, ton lots 18.25c, less ton 19.5c. Deld. Spot, add 0.25c.

Graphidox No. 4: (Si 48-52%, Ca 5-7%, Ti 9-11%), C.l. packed, 17.50c per lb of alloy; ton lots 18.50c; less ton lots 20c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

V-5 Foundry Alloy: (Cr 38-42%, Si 17-19%, Mn 8-11%), C.1 packed 16.6c per lb of alloy; ton lots 18.10c; less ton lots 19.35c, f.o.b, Niagara Falls; freight allowed to St. Louis.

Simanal: (Approx. 20% each Si, Mn, Al; bal. Fe). Lump, carload, bulk 14.50c, Packed c.l. 15.50c, ton lots, 15.75c, less ton lots,16.25c per lb of alloy. Delivered. lb of alloy.

Ferrophosphorus: (23-25% based on 24% P content with unitage of \$4 for each 1% of P above or below the base); carloads, f.o.b. sellers' works, Mt. Pleasant, Siglo, Tenn., \$90 per gross ton.

Ferromolybdenum: (55-75%). Per 1b contained Mo, f.o.b. Langeloth, \$1.32 in all sizes except powdered which is \$1.41; Washington, Pa., furnace, any quantity \$1.32.

Technical Molybdic-Oxide: Per lb contained Mo, fo.b. Langeloth, Pa., \$1.14 in cans; in bags, \$1.13, f.o.b. Langeloth, Pa.; Washington, Pa., \$1.13.



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#### ORES-COKE-REFRACTORIES

Lake Superior Iron Ore Lake Superior Iron Ore
(Prices effective July 1, 1953, and threafter; gross ton, 51.50% iron natural, rail of vessel, lower lake ports.)
Old range bessemer \$10.30
Old range nonbessemer 10.15
Mesabi bessemer 9.90
Mesabi nonbessemer 9.90
Mesabi nonbessemer 9.90
Mesabi nonbessemer 9.90
The foregoing prices are based on upper lake rail freight rates, lake vessel freight rates, handling and unloading charges, and taxes thereon which were in effect on June 24, 1953, and increases or decreases after such date are for buyer's account.

Manganese Ore
Mn 48%, nearby, \$1.02-\$1.05 per long ton unit, c.i.f. U. S. ports, duty for buyer's account; 46-47%, \$0.95-\$0.97.

Chrome Ore
Gross ton, f.o.b. cars, New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland. Oreg., or Tacoma, Wash.:

South African Transvaal
44% no ratio \$24.00-\$28.00
48% no ratio 34.00

Domestic
(Rail nearest seller) \$39.00

48% 3:1 \$39.00

Molybdenum
Sulphide concentrate, per lb, Mo content mines, unpacked \$1.00

Antimony Ore
Per unit of Sb content, c.i.f. seaboard
50-80% \$2.40-\$2.80
85% min. \$3.40-\$3.50 

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Fire Clay Brick

Fire Clay Brick

High-Heat Duty: Pueblo, Colo., \$89; Ashland,
Grahn, Hayward, Hitchins, Haldeman, Olive
Hill, Ky., Athens, Troup, Tex., Beech Creek,
Clearfield, Curwensville, Lock Haven, Lumber, Orviston, West Decatur, Pa., Bessemer,
Ala., Farber, Mexico, St. Louis, Vandalia,
Mo., Ironton, Oak Hill, Parral, Portsmouth,
O., Ottawa, Ill., Stevens Pottery, Ga., Woodbridge, N. J., \$109; Salina, Pa., \$114; Niles,
O., \$120; Los Angeles, Pittsburg, Calif.,
\$132.30. O., \$1: \$132.30.

Silica Brick
Standard: Alexandria, Claysburg, Mt. Union,
Sproul, Pa., Ensley, Ala., Portsmouth, O.,
\$115; Warren, O., Hays, Pa., \$120; Niles, O.,
\$120; E. Chicago, Ind., Joliet, Rockdale, Ill.,
\$125; Cutler, Utah, \$116.55; Los Angeles,
\$122.85.

Insulating Fire Brick
2300° F: Massillon, O., \$178.50; Clearfield,
Pa., \$213; Augusta, Ga., Beaver Falls, Zelienople, Pa., Mexico, Mo., \$206; Vandalia, Mo.,
\$214.10; Portsmouth, O., \$207.50; Bessemer,
Ala., \$212.80.

Ladie Brick

Dry Pressed: Bessemer, Ala., \$64.60; Alsey, Ill., Chester, New Cumberland, W. Va., Freeport, Johnstown, Merrill Station, Pa., Wellsville, O. \$77.50; Mexico, Mo., \$73.50; Clearfield, Pa., Portsmouth, O., \$33; Perla, Ark., \$109; Los Angeles, \$110.25; Pittsburg, Calif., \$111.30.

Reesdale, Pa., \$139.70; Johnstown, Pa., \$140; Clearfield, Pa., \$148.50; St. Louis, \$151.80; Athens, Tex., \$155.

Nozzies
Reesdale, Pa., \$223.50; Johnstown, Pa., \$229.20; Clearfield, Pa., \$241.40; St. Louis, \$247.10; Athens, Tex., \$247.70.

Runners
Reesdale, Pa., \$174; Johnstown, Pa., \$177.80; Clearfield, Pa., \$185.50; St. Louis, \$187.30; Athens, Tex., \$191.80.
High-Alumina Brick
50 Per Gent: Clearfield, Pa., St. Louis, Mexico, Mo., \$179; Danville, Ill., \$189.30.
60 Per Cent: St. Louis, Mexico, Vandalia, Mo., \$223.00; Danville, Ill., \$213.20.
70 Per Cent: St. Louis, Mexico, Vandalia, Mo., \$225; Danville, Ill., \$258; Clearfield, Pa., \$252.
Domestic, dead-burned bulk; Billmeyer, Blue Bell, Williams, Plymouth Meeting, York, Pa., Millville, W. Va., Bettsville, Millersville, Martin, Narlo, Gibsonburg, Woodville, O., \$14.50; Thornton, McCook, Ill., \$14.60; Dolly Siding, Bonne Terre, Mo., \$13.65.
Magnesite
Domestic, deadburned bulk; Luning, Nev., \$38.

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Price per net ton Beehive Ovens

Price per net ton

Bechive Ovens
Connelisville, furnace \$14.50-\$15.00
Connelisville, foundry 16.50-17.00

Oven Foundry Coke

Kearney, N. J., ovens \$24.00
Everett. Mass. ovens
New England, deld. \$26.05
Chicago, ovens 24.50
Chicago, ovens 24.05
Milwaukee, ovens 24.05
Milwaukee, ovens 24.05
Milwaukee, ovens 25.55
Indianapolis, ovens 24.25
Chicago, deld. 28.12
Cincinnati, deld. 25.85
Palnesville, O., ovens 25.50
Cleveland, deld. 27.43
Erie, Pa., ovens 25.00
Birmingham, ovens 25.00
Birmingham, ovens 23.00
Birmingham, ovens 23.00
Swedeland, Pa., ovens 23.00
St. Louis, ovens
St. Louis, ovens 23.00
St. Louis, ovens 23.00
Cincinnati, deld. 26.00
St. Paul, ovens 23.00
Cincinnati, deld. 26.00
St. Paul, ovens 24.00
Cincinnati, deld. 26.00
St. Paul, ovens 25.50
Detroit, deld. 26.62
Detroit, ovens 25.50
Detroit, deld. 28.08
Fiint, deld. 28.08
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l.c.l. drums 19.50

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3		40	27.25
3 4 5 ½		40	26.00
5 1/2		40	25.75
8		60	23.25
7, 8, 9, 10		60	21.00
6 7, 8, 9, 10 12, 14	2	72	20.50
16		72	20.00
17		60	20.50
18		72	20.50
20		72	20.00
		CARBON	
40		100	\$8.95
40, 35, 30		110	8.95
30		84	9.10
24		96	8.90
24		72, 84	9.10
20 20		90	8.95
20		84	9.10
17		72	9.10
17		60	9.50
17 17 1 <b>4</b>		72	9.50
14, 12, 10		60	10.30
3		60	10.55

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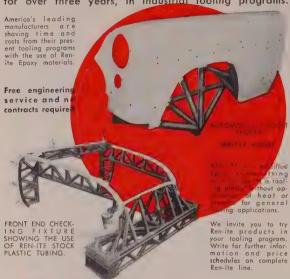


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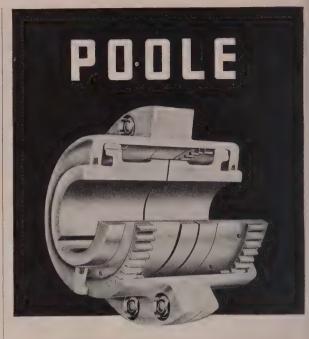
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ARCHITECTURAL GRILLES
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DIAMOND MFG. CO. BOX 32 WYOMING, PA.

#### Reinforcing Bars . . .

Reinforcing Bar Prices, Page 154

Chicago-A good volume of work keeps coming out in construction lines which promises a busy summer for steel reinforcing items. Suppliers are busy preparing estimates, a chore that always is rough when contractors become highly competitive.

Seattle-Demand for reinforcing bars is stronger. Business of major proportions is expected in the next 90 days. Competition is keen.

#### STRUCTURAL SHAPES . .

STRUCTURAL STEEL PLACED

000 tons, nine state highway bridges, Ro-chester area, Monroe county, New York, to Ernst Iron Works, Buffalo; Lane Construction Corp., Meriden, Conn., general contractor.

950 tons, club house, Y.M.C.A., Milwaukee, to Wisconsin Bridge & Iron Co., Milwaukee; Gebhard Berghammer, Inc., Milwaukee,

general contractor.

general contractor, 535 tons, alert hangar and buildings, Dow Airfield Base, Bangor, Me., to American Bridge Division, U. S. Steel Corp., Pitts-burgh; John Volpe Construction Co., Malden, Mass., general contractor.

22 tons, state girder bridge, Monroe county, Pennsylvania, to Bethlehem Fabricators,

Bethlehem Pa

260 tons, bakery, Norristown, Pa., to Anthracite Bridge Co., Scranton, Pa.
225 tons, municipal coliseum, Spokane, Wash.,

Bethlehem Pacific Coast Steel Corp., Seattle.

190 tons, Queen Lane pumping station, Phila-delphia, to Robertson Steel Co., that city. 105 tons, long span joists, high school, Biller-

ica, Mass., to Bethlehem Steel Co., Bethlehem Pa.: Poorvu Construction Co., Boston, general contractor.

ton, general contractor.
100 tons, prefabricated warehouse for Standard Oil Co. of California's deep water terminal, Seward, Alaska, to Hallidie Machinery Co., Seattle; Valle-Sommers Construction

Co., Seattle; Valle-Sommers Construction Co., Seattle, general contractor. 100 tons, grain storage, Mansfield, Wash., and miscellaneous contracts, to Isaacson Iron Works, Seattle.

#### STRUCTURAL STEEL PENDING

2600 tons, Navy armor plate plant, Lukens Steel Co., Coatesville, Pa., Brotherton Con-struction Co., Harrisburg, Pa., low on general contract.

general contract.

2300 tons, double cantilever maintenance hanger, Larson Air Field, Moses Lake, Wash.; general contract to Donald M. Drake Co., Portland, Oreg., Bidding \$2,215,993, by U. S. Engineer.

520 tons, high school, Woodbridge, N. J., Elizabeth Iron Works, Elizabeth, N. J.,



430 tons. Gore Air Field hangar, Great Falls. Mont.: Hagstrom Construction Co., St. Paul, low \$647,000 on one schedule; James I. Barnes Construction Co., Seattle, low \$647.120 on another schedule.

300 tons, state bridge work, Bucks county, Pennsylvania, Langenfelder Contracting Co., Baltimore, low on general contract.

state highway bridge, Stamford, 225 tons Conn.; bids in.

225 tons, state highway bridge, Otsego county, New York; Lane Construction Corp., Meriden, Conn., low, general contract.

135 tons, state highway bridge, Portsmouth-Newington, N. H.; Landers & Griffith Co., Manchester, N. H., low.

100 tons, structurals and bars, state bridge, Isle La Motte, Vt.; bids May 7, Mont-

#### REINFORCING BARS . . .

#### REINFORCING BARS PLACED

00 tons, 14-story building, First National Bank, Jackson, Miss., to Ceco Steel Products, Inc., Birmingham; Southeastern Construction Co., Charlotte, S. C., general

600 tons, grain elevators at Sprague, Spokane and other eastern Washington points, to Northwest Steel Rolling Mills Inc., Seattle; Haynes & Co., Spokane, general contrac-

tors.
520 tons, aircraft plant, Sikorsky Division,
United Aircraft Corp., Stratford, Conn., to
Concrete Steel Co., New York; E. & F.
Construction Co., Bridgeport, Conn., general contractor.

eral contractor.
470 tons, high school, Billerica, Mass., to
Concrete Steel Co., Boston; Poorvu Construction Co., Boston, general contractor.
460 tons, club house, Y.M.C.A., Milwaukee,
to Concrete Steel Co., Chicago; Gebhard
Berghammer, Inc., Milwaukee, general contractor.

125 tons, piping, etc., Eielson Air Force Base, Alaska, to Northwest Steel Rolling Mills Inc., Seattle: Reed & Martin, Fairbanks, Alaska, general contractors.

Mont., to Bethlehem Pacific Coast Steel Corp., Seattle,

100 tons, bulk fuel storage and facilities, airfield base, Portsmouth, N. H., to Joseph T. Ryerson & Son, Inc., Cambridge, Mass.; J. F. McGlame Co., Brookline, Mass., general contractor.

#### REINFORCING BARS PENDING

300 tons, state highway girder spans, Lewis county, Washington; bids to Olympia, Wash.,

#### PLATES . . . PLATES PLACED

100 tons or more, airfield base fueling storage tanks, Portsmouth, N. H., to Chicago Bridge & Iron Co., Chicago; F. J. McGlame Co., Brookline, Mass., general contractor.

#### CAST IRON PIPE PENDING

500 tons, (estimated) 34,000 feet 16 to 6-inch; bids to George E. Fisher, city engineer, Pasco, Wash., May 4. 100 tons, 16 to 6 inch, bids in to Puyallup and Wenatchee, Wash.

#### RAILS, CARS . . .

#### RAILROAD CARS PLACED

Aliquippa & Southern, 42 one-hundred-ton

gondola cars, to own shops.
Chicago & Eastern Illinois, 10 fifty-ton box cars, to Pullman-Standard Car Mfg. Co.,

Fruit Growers Express Co., 100 seventy-ton mechanical refrigerator cars, to its own

Missouri-Kansas-Texas, one 72-passenger stain-less steel coach to Pullman-Standard Car Mfg. Co., Chicago.

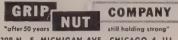
Missouri Pacific, 35 fifty-ton flat cars, to its De Soto, Mo. shops. Union Pacific, 100 covered hopper cars, to Pullman-Standard Car Mfg. Co., Chicago.



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### Scrap Firmer Despite Sluggish Demand

Prices rise at some consuming points but generally the market is steady with buying of dealer grades in a rut. Pickup in demand during May and June expected

Scrap Prices, Page 180

New York—Brokers have boosted their buying prices \$1 per ton on the major open-hearth grades, now offering \$15 for No. 1 heavy melting and No. 1 bundles, \$13 for No. 2 heavy melting and \$11 for No. 2 bundles. Strength is derived primarily from a better tone in certain other areas rather than from any particular improvement in demand among consumers drawing on this district. Actually, these advances are nominal.

Short shovel turnings are higher at \$9 to \$10, based on moderate buying. Low phos is steady at \$20, and machine shop turnings and mixed borings and short turnings are nominally unchanged. No. 1 cupola cast is firm at \$29 to \$30. Demand for 18-8 stainless sheets, clips and solids is stronger with the market higher at \$165 to \$170. Other stainless items are quiet and unchanged.

Philadelphia—The steel scrap market here continues in a rut. While prices are unchanged, trading is at virtual standstill and traders see little activity in early prospect. This applies not only to the open-hearth grades, but to low phos scrap and mixed borings and turnings. Rail specialties are moving slowly although there is a fair undertone of strength, and in the cast grades the price trend is a bit mixed. No. 1 cupola is higher at \$36, delivered consumer plant, while heavy breakable cast is off a bit at \$36.50.

Boston—Recovery in steel scrap prices centers mostly in No. 2 heavy melting steel and No. 2 bundles, although primary grades are somewhat firmer. Freight rates to the larger consuming points still tend to retard volume of No. 1 grades at current shipping base prices. Volume of cast is small but with prices unchanged,

Youngstown—Stronger tone is developing in the scrap market here although relatively little buying is in evidence. One fabricating concern sold No. 1 bundles recently at \$30 per gross ton, which is considerably above the nominal quotation of \$26 to \$27 heretofore generally recognized as the market in the absence of dealer sales. No. 2 is reported at \$24 to \$25.

Steel plants in this area are gen-

erating almost enough scrap in their own operations to meet their current requirements. One producer reports scrap from its operations in February exceeded its requirements by 8000 tons.

Chicago — Scrap prices have held fairly steady the past 10 days following their upward swell prior to that. One advance is \$1 on No. 1 factory bundles to \$31.

Whether scrap has returned to a reasonable economic level pricewise at which it could more or less stabilize for a while is a moot question. There is no significant change in demand with the steel mills operating slightly below 80 per cent of capacity.

Cast grades show some signs of weakening as foundries continue to operate spottily.

Buffalo—Stronger tendencies dominate the scrap market here. One of the leading mills lifted its embargo on orders placed in the last quarter of 1953 at prices sharply above current levels. On the bullish side also is an unfilled inquiry for No. 1 heavy melting steel for shipment at prices above current levels. Activity also is reported in cast grades. Both cupola and No. 1 machinery are in demand.

Detroit — Scrap prices advanced slightly here last week as automotive lists closed. Major impetus is reported in Chicago with scrap going from Detroit to that city by boat and rail. Heavy inventories of most Detroit area steel producers create some question as to the duration of the price movement.

St. Louis — Scrap prices have strengthened mildly and selectively under buying by consumers whose stocks had reached an extreme low. Turnings gained about \$1 and some rail items \$2. Dealers yard receipts of melting steel are so scant there would be a general scarcity were it not for continuing high railroad offerings.

Cincinnati — Strength is apparent throughout the list. Cast iron grades made the greatest show of force with increases of \$2 to \$3 a ton. Charging box cast and heavy breakable cast moved up \$3 a ton to \$34. No. 1 cupola climbed \$2 to \$38 and drop broken machinery advanced a similar amount to \$44. A shortage of supply and increased demand are the factors

(Please turn to page 182).



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#### IRON AND STEEL SCRAP

Consumer prices, per gross ton, except as otherwise noted, including broker's commission, as reported to STEEL. Changes shown in italics.

Consumer prices, per gross ton,	except as otherwise noted, including b	TORCE S COMMISSION, US 10porton to 1	
STEELMAKING SCRAP	YOUNGSTOWN (Delivered consumer plant)	(HICAGO No. 1 heavy melting 29.00-30.00	ST. LOUIS (Brokers' buying prices)
COMPOSITE	No. 1 hages malting 28.00.20.00	No. 2 heavy melting 27.00-28.00 No. 1 factory bundles 30.00-31.00 No. 1 dealer bundles 28.00-29.00	No. 1 heavy melting 25.50 No. 2 heavy melting 24.50
April 29 \$26.00 April 22 26.00	No. 2 heavy melting 23.00-24.00 No. 1 bundles 28.00-29.00 No. 2 bundles 21.00-22.00 Machine shop turnings 12.00-13.00 Short showel turnings 18.00-19.00 Cast iron horizon 18.00.19.00	No. 2 bundles 22.00-23.00	No. 1 bundles 25.50 No. 2 bundles 19.00-20.00
Mar. Avg. 24.37	Machine shop turnings 12.00-13.00	No. 1 busheling 29.00-30.00 Machine shop turnings. 13.00-14.00	Machine shop turnings. 12.00 Short shovel turnings. 14.00
Apr. 1953 42.88 Apr. 1949 24.06	Cast iron borings 18.00-19.00 Low phos. 29.00-30.00 Electric furnace bundles 28.00-29.00	Mixed borings, turnings 13.00-14.00 Short shovel turnings. 15.00-16.00	Cast Iron Grades
Based on No. 1 heavy melting	Electric furnace bundles 28.00-29.00	Cast iron borings 15.00-16.00 Cut structurals, 3-ft 32.00-33.00	No. 1 cupola
grade at Pittsburgh, Chicago and eastern Pennsylvania.	Railroad Scrap	Punchings & plate scrap 32.00-33.00 Electric furnace bundles. 31.00-32.00	Heavy breakable cast. 27.00 Unstripped motor blocks 27.00
	No. 1 R.R. heavy melt. 30.00-31.00 PHILADELPHIA	Cast Iron Grades	Brake shoes 30.00 Clean auto cast 39.00
	(Delivered consumer plant)	No. 1 cupola 38.00-39.00 Stove plate 34.00-36.00	Stove plate 30.00
PITTSBURGH	No 2 heavy melting 20.00	Unstripped motor blocks 24.00-25.00 Clean auto cast 40.00-42.00	Railroad Scrap No. 1 R.R. heavy melt. 29.00
(Delivered consumer plant)	No. 2 bundles 18.00	Drop broken machinery 41.00-42.00  Railroad Scrap	Rails, 18-in. and under. 40.00 Rails, random lengths 36.00 Rails, rerolling 39.00
No. 1 heavy melting 26.00-27.00 No. 2 heavy melting 24.00-25.00	No. 1 busheling 22.00* Electric furnace bundles 23.00-23.50	11 4 m m T 1. 24 00 22 00	Uncut tires 30.00
No. 2 heavy melting. 24.00-25.00 No. 1 bundles 26.00-27.00 No. 2 bundles 22.00-23.00 No. 1 busheling 26.00-27.00 Machine shop turnings 14.00-15.00	Machine shop turnings. 11.00 Mixed borings, turnings 12.00 Short shovel turnings. 16.00*	Rails, 2-ft. and under. 44.00-45.00	
No. 1 busheling 26.00-27.00 Machine shop turnings 14.00-15.00	Structurals & plate 26.00-27.00 Heavy turnings 20.00	No. 1 K.K., heavy melt. 31.00-32.00 R.R. malleable 40.00-42.00 Rails, 2-ft. and under 44.00-45.00 Rails, 18-in. and under 45.00-46.00 Angles, splice bars 38.00-38.00 Rails, rerolling 39.00-40.00	SEATTLE (Delivered consumer plant)
Mixed borings, turnings 14.00-15.00 Short shovel turnings. 18.00-19.00	Couplers, springs, wheels 30.00 Rail crops, 2 ft & under 41.00	Stainless Steel Scrap	No. 1 heavy melting 23.00 No. 2 heavy melting 19.00
Cast iron borings       18.00-19.00         Cut structurals       29.00-30.00         Heavy turnings       26.00-27.00	Cast Iron Grades	18-8 clips & solids130.00-140.00 18-8 turnings 60.00	No. 1 bundles 22.00 No. 2 bundles 16.00
Punchings & plate scrap 30.00-31.00 Electric furnace bundles 30.00-31.00	No. 1 cupola	18-8 turnings 60.00 430 clips & solids 40.00-42.00 430 turnings 20.00-22.00	Machine shop turnings, 11.50
Cast Iron Grades	Heavy breakable cast 36.50 Unstripped motor blocks 28.00*	DETROIT	Mixed borings, turnings 11.50 Short shovel turnings. 11.50
No. 1 cupola 36.00-37.00	Drop broken machinery 41.00	(Brokers' buying prices; f.o.b. shipping point)	Electric furnace, No. 1 35.00  Cast Iron Grades
Charging box cast 33.00-34.00 Heavy breakable cast 30.00-31.00 Unstripped motor blocks 24.00-25.00	*Nominal.	No. 1 heavy melting 18.00	(F.o.b. shipping point) No. 1 cupola 30.00-35.00
No. 1 machinery cast. 42.00-43.00	NEW YORK         (Brokers' buying prices)           No. 1 heavy melting         15.00           No. 2 heavy melting         13.00           No. 3 heavy melting         15.00	No. 1 heavy melting       18.00         No. 2 heavy melting       10.00         No. 1 bundles       19.50         No. 2 bundles       16.50	Heavy breakable cast. 25.00 Unstripped motor blocks 23.00
Railroad Scrap	No. 1 heavy melting 15.00 No. 2 heavy melting 13.00	Machine shop turnings 7.00	No. 1 wheels
No. 1 R.R. heavy melt. 29.00-30.00 Rails, 2-1t. and under. 44.00-45.00 Rails, 13-in. and under 45.00-46.00	No. 2 bundles	Short shovel turnings 9.00	Brake shoes 28.00  Railroad Scrap
Rails, random lengths. 38.00-39.00 Railroad specialties 34.00-35.00	Machine shop turnings. 4.00* Mixed borings, short	Punchings & plate scrap. 22.00	(Delivered consumer plant)
Stainless Steel Scrap	turnings 8.00* Los phos. (structural & 20.00	Cast Iron Grades   No. 1 cupola	Rails, random lengths 30.00-34.00
(F.o.b, shipping point) 18-8 bundles & solids165.00-170.00	plate)	Charging box cast 27.00 Stove plate 29.00 Heavy breakable 26.00	SAN FRANCISCO No. 1 heavy melting 20.00
18-8 turnings 85.00-90.00 430 bundles & solids 65.00-70.00	Cast Iron Grades	Heavy breakable 26.00 Unstripped motor blocks Clean auto cast 40.00	No. 2 heavy melting       16.00         No. 1 bundles       19.00         No. 2 bundles       16.00
430 turnings 50.00-52.00	No. 1 cupola 29.00-30.00 Unstripped motor blocks 21.00-22.00*	Malleable 28.00	No. 2 bundles         16.00           No. 1 busheling         20.00           Machine shop turnings         5.00
CLEVELAND	Stainless Steel	No. 1 heavy melting 25.00-26.00	Mixed borings, turnings 5.00 Short shovel turnings 9.00
(Delivered consumer plant)  No. 1 heavy melting 25.00-26.00	18-8 sheets, clips, solids	No. 2 heavy melting.       19.50-20.50         No. 1 bundles       25.00-26.00         No. 2 bundles       17.50-18.50	Cast iron borings 9.00 Cut structurals 25.00
No. 2 heavy melting 21.00-22.00 No. 1 bundles 25.00-26.00	solids     165.00-170.00       18-8 borings, turnings.     70.00-75.00       430 sheets, clips, solids     40.00       410 sheets, clips, solids     30.00	No. 1 busneling 20.50-21.50	Heavy turnings 9.00 Punchings & plate scrap 25.00 Electric furnace bundles 19.00
No. 1 heavy melting 25.00-26.00 No. 2 heavy melting 21.00-22.00 No. 1 bundles 25.00-26.00 No. 2 bundles 18.00-19.00 No. 1 busheling 25.00-26.00 Machine shot turning 11.00.12.00		Machine shop turnings. 14.00-15.00 Mixed borings, turnings 16.50-17.00 Short shovel turnings 17.50-18.00	Cast Iron Grades
No. 1 busheling 25,00-26,00 Machine shop turnings 11,00-12,00 Mixed borings, turnings 15,50-16,50 Short showel turnings 15,50-16,50 Cast iron borings 15,50-16,50 Low phos. 26,00-27,00 Allow tree, short shovel	BOSTON	Mixed borings, turnings         16.50-17.00           Short shovel turnings         17.50-18.00           Cast iron borings         16.50-17.00           Low phos         27.50-28.50	No. 1 cupola 39.00 Charging box cast 35.00
Cast iron borings 15.50-16.50	(Brokers' buying prices; f.o.b. shipping point)	Cast Iron Grades	Stove plate
Low phos	11 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	(F.o b. shipping point)  No. 1 cupola 34.00-35.00  No. 1 machinery 37.00-38.00	Unstripped motor blocks 29.00 Brake shoes 35.00
	No. 1 bundles 14.50-15.00 No. 2 bundles 11.00-11.25	No. 1 machinery 37.00-38.00	Clean auto cast       39.00         No. 1 wheels       39.00         Burnt cast       23.00
Cast Iron Grades  No. 1 cupola 40.00-41.00	Machine shop turnings. 3.00-3.50 Mixed borings, turnings 5.50-6.00	Railroad Scrap Rails, random lengths, 33.00-34.00	Drop broken machinery 43.00
Charging box cast 26.50-27.50	Short shovel turnings. 7.25-7.50 No. 1 cast 29.00-30.00	No. 1 machinery 37.00-38.00  Railroad Scrap  Rails, random lengths. 33.00-34.00  Rails, 3-ft and under. 40.00-41.00  Railroad specialties 34.50-35.50	LOS ANGELES
Stove plate 36.50-37.50  Heavy breakable cast 25.50-26.50  Unstripped motor blocks 24.50-25.50	No. 1 machinery cast 27.00-28.00	BIRMINGHAM	No. 1 heavy melting. 20.00 No. 2 heavy melting. 16.00
Brake shoes	CINCINNATI	No. 1 heavy melting 19.00-20.00 No. 2 heavy melting 17.00-19.00	No. 1 bundles       18.00         No. 2 bundles       14.00         Machine shop turnings       5.00
No. 1 wheels	(Brokers' buying prices; f.o.b. shipping point)	No. 2 heavy melting 17.00-19.00 No. 1 bundles 19.00-20.00 No. 2 bundles 15.00-16.00	Cast Iron Grades
Drop broken machinery 41.50-42.50  Railroad Scrap	No. 1 heavy melting 23.00-24.00 No. 2 heavy melting 20.00-21.00		(F.o.b. shipping point) No. 1 cupola
No. 1 P. P. hagga malt 20.00 21.00	No. 2 heavy melting. 20.00-21.00 No. 1 bundles 23.00-24.00 No. 2 bundles 18.00-19.00	Cast iron borings 13.00-14.00 Short shovel turnings 14.00-15.00 Machine shop turnings 12.00-13.00 Electric furnace bundles 25.00-26.00	HAMILTON, ONT.
R.R. malleable 40.00-41.00 Rails, 3-ft. and under 43.00-44.00 Rails, 18 in. and under 46.00-47.00 Rails, random lengths 39.00-40.00	Machine shop turnings, 10.00-11.00	Cast Iron Grades	(Delivered prices)
Rails, random lengths 39.00-40.00	Mixed borings, turnings 11.00-11.50 Short shovel turnings. 13.00-14.00 Cast iron borings 11.00-11.50	(F.o.b. shipping point) No. 1 cupola 39.00-40.00,	No. 1 heavy melting. \$22.00 No. 2 heavy melting. 19.00
Cast steel       34.00-35.00         Railroad specialties       35.00-36.00         Uncut tires       36.00-37.00	Low phos., 18-in 32.00-33.00	Charging box cast, 28.00-29.00 Stove plate 36.00-37.00	No. 1 bundles         22.00           No. 2 bundles         17.00           Mixed steel scrap         16.00
Angles, splice bars 41.00-42.00 Rails, rerolling 41.00-42.00	Cast Iron Grades No. 1 cupola	Bar crops and plate. 28.00-29.00 Structural plate 2 ft. 28.00-29.00 Heavy breakable cast. 28.00-29.00	Mixed steel scrap 16.00 Mixed borings, turnings 12.00 Rails, remelting 32.00
Stainless Steel	Heavy breakable cast 34.00 Charging box cast 34.00	Unstripped motor blocks 32.00-29.00 No. 1 wheels 45.00-46.00	Busheling, new factory: Prepared
(F o b. shipping point)	Drop broken machinery. 44.00	Railroad Scrap	Unprepared
18-8 bundles, solids	Railroad Scrap No. 1 R.R., heavy melt. 28.00-29.00	No. 1 R.R. heavy melt. 23.00-24.00 Rails, 18 in. and under 39.00-40.00	Cast Iron Grades†
solids nom. 70.00	Malleable	Rails, random lengths. 32.00-33.00 Angles, splice bars 35.00-36.00 Stand, steel axles 35.00-36.00	No. 1 machinery cast 42.00-45.00
430 turnings 40.00-50.00	Rails, random lengths 35.00-36.00	Stand. steel axles 35.00-36.00	†F.o.b., shipping point.



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behind the rises. Low phosphorous rose \$1 to \$32 to \$33. Rails also went up \$1 a ton.

Pittsburgh — Scattered purchases of open-hearth grades were reported last week. Volume of ordering was not sufficient to raise prices, but present quotations are stable. Some dealers expect prices on better grades to increase slightly next week. As yet mills plan no major purchases.

Cleveland—Stronger sentiment continues to develop in the scrap market here although dealer grades are still moving slowly. On the strength of broker bidding against production lists now coming out prices are up another \$1 per ton on the steelmaking grades. Current quotations, however, are largely nominal in the absence of active mill buying.

Birmingham—There is virtually no market for scrap in this section. What few orders there are present some difficulty in filling because of lack of offerings due to current low prices.

Los Angeles—Prices on steelmaking grades of scrap are firming. The stronger tone, however, is attributed to speculative factors and not to renewed mill demand, which remains dull.

Seattle—The scrap market continues sluggish, strength reported in the East not being felt here.

Washington — Committee of the National Federation of Independent Scrap Yard Dealers recently conferred here with Dr. Arthur S. Flemming, director of the Office of Defense Mobilization, to consider a formula for stockpiling scrap for national defense.

#### **Announce New Export Prices**

New York — New export prices have been announced on several products by the United States Steel Export Co., subsidiary of U. S. Steel Corp. The new prices were put into effect Apr. 22 and include freight to New York, Philadelphia and Baltimore. They are as follows:

American Standard Pipe, T & C, seamless black: 2-inches, minus 10.115 per cent discount; 2½-inch, minus 14.115; 3-inch, minus 16.615; 3½ and 4-inch, minus 20.95; 5-inch, minus /20.2; 6-inch, minus 22.7. Seamless galvanized: 2-inch, plus 4.885 discount; 2½-inch, plus 2.635; 3-inch, plus 0.135; 3½ and 4-inch, minus 4.2; 5-inch, minus 3.45; 6-inch, minus 5.95. Other new prices are: Wire rods, \$4.71 per 100 pounds; hot-rolled alloy bars, \$5.10, and cold-drawn alloy bars, \$6.55.



#### ... if only for THEIR sakes

... learn how to protect yourself from death from cancer. They need you!

And for your sake and theirs you must keep on remembering that the best cancer "insurance" is:

FIRST ... to make a habit of periodic health check-ups no matter how well you may feel, always including a thorough examination of the skin, mouth, lungs and rectum and (for women) the breasts and generative tract.

SECOND... to learn the seven danger signals that may mean cancer, and go straight to the doctor at the first sign of any one of them-(1) Any sore that does not heal (2) A lump or thickening, in the breast or elsewhere (3) Unusual bleeding or discharge (4) Any change in a wart or mole (5) Persistent indigestion or difficulty in swallowing (6) Persistent hoarseness or cough (7) Any change in normal bowel habits.

For other life saving facts about cancer, phone the American Cancer Society office nearest you, or address your letter to "Cancer"-in care of your local Post Office.

> American Cancer Society

#### CLASSIFIED

#### Accounts Wanted

DIRECT REPRESENTATIONS WANTED! Established manufacturers agency contacting steel mills, fabricators and miscellaneous industrials in eastern Middle Atlantic area increasing sales force and wants to add one or two live lines. Reply Box 960, STEEL, Penton Building, Cleveland 13, Ohio.

STEEL MILL REPRESENTATIVE with angi-STEEL MILL REPRESENTATIVE with engineering and manufacturing background covering North and South Carolina and Eastern Tennessee desires to represent mills producing cold rolled sheet and strip. Will also consider representing producers of cold formed shapes and moldings, perforated metals and other related products. Reply Box 964, STEEL, Penton Building, Cleveland 13, Ohio. land 13 Ohio

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PLANT MANAGER—M.I.T. Engineering Graduate with Proven Record in Supervision, Production, Tooling, Cost Reduction, Methods Improvement and Related Functions. Reply Box 949, STEEL, Penton Building, Cleveland 13, Ohio.

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SALARIED POSITIONS \$5,000 to \$35,000. We offer the original personal employment service (established 44 years). Procedure of highest ethical standards is individualized to your personal requirements. Identity covered; present position protected. Ask for particulars. R. W. BIXBY, INC., 665 Brisbane Bidg., Buffalo 3, N.Y.

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For the few punch presses our tools don't fit, we will gladly quote on making holders to take standard punches and dies with their repeated saving of time and money.



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Our hand operated bench type cutters are made in three handy sizes. By simply changing blades you can cut angles, channels, flat bars, rods, and wire rope.

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small, hand operated punch that
would not only
stand up under
constant use but
would also hold the
punch and die in
true alignment at
all times.
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hole through 1/4"
steel or equivalent.
Weight: 70 lbs.





Our Fisher Bender (also known as Metal Lathers' Bender) is used in many trades because of its ease of operation and dura-bility. It will bend ½" square or round iron, 2" x½" channel iron, 2½" x5/16" flat iron cold. Weight 40 lbs.

Send tor catalog sheets giving full informa-tion on our tools—including prices.

T. H. LEWTHWAITE MACHINE CO.

310 EAST 47th STREET, NEW YORK 17, N.Y.

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# Farval saves 50 minutes of each lubricating hour on Clearing press

GOOD news for cost-conscious management!

Lubrication studies show that Farval saves 50 minutes out of every hour of oiling labor.

In a lubrication study of this Clearing press, handoilers were clocked with a grease gun as they lubricated, cleaned nipples, refilled gun, climbed and traveled from point to point. Averages show that it takes .747 minutes of labor per point to do all this. Thus, to grease this 41-point press by hand once per shift would take a little over 30 minutes. That's one hour a day based on a two-shift day.

Now, look at Farval. Experience shows that it takes only .188 minutes of labor per point to build up and hold pressure and lubricate. On the same basis, Farval lubrication takes a little over 10 minutes per two-shift day. This includes time for filling the Farval reservoir once every 5 days. In other words, Farval saves 50 minutes out of every hour of oiling labor! With larger Farval systems and with more points per press, the time savings are even greater.

Farval is the original Dualine system of centralized lubrication that delivers oil or grease under pressure to a group of bearings from one central station, in exact quantities, as often as desired. The Farval valve has only two moving parts—is simple, sure and foolproof, without springs, ball-checks or pinhole ports to cause trouble. Indicators at every bearing show that each valve has functioned.

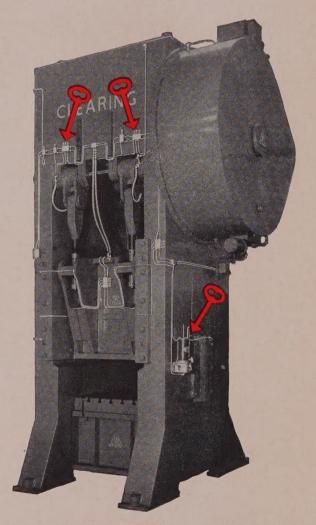
Get full information on the Farval system of centralized lubrication by writing today for new Bulletin 26. The savings possible in your own plant will surprise you! The Farval Corporation, 3270 East 80th Street, Cleveland 4, Ohio.

Affiliate of The Cleveland Worm & Gear Company, Industrial Worm Gearing. In Canada: Peacock Brothers Limited.





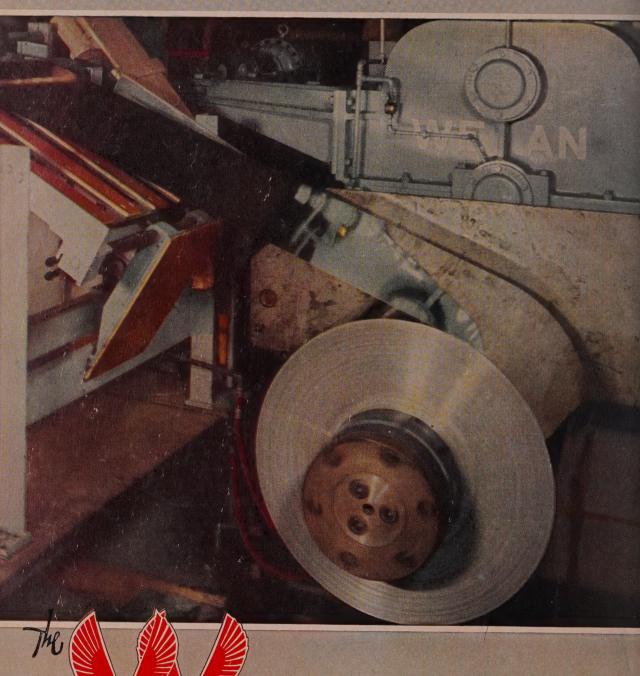
FARVAL-Studies in Centralized Lubrication No. 150



KEYS TO ADEQUATE LUBRICATION—Wherever you see the sign of Farval—the familiar valve manifolds, dual lubricant lines and central pumping station—you know a machine is being properly lubricated. Farval manually operated and automatic systems protect millions of industrial bearings.

The 310-ton Clearing press shown above is installed in a well-known automobile plant in Michigan. You can see the major part of the Farval manual system—valve manifolds, lubricant lines and manual pumping unit. Within seconds and without moving from the central pumping station, one man can lubricate all 41 points.

The Wean Engineering Company, Inc., Warren, Ohio is a recognized specialist in the design and installation of sheet, tin and strip mill equipment. The expert knowledge and trained imagination of one of the world's most noted steel mill engineering firms are at your service when you specify Wean—whether the job calls for a single piece of equipment or a complete design of an entire line.



EN C WARR

ENGINEERING

COMPANY, Inc.